Access DB# 114994

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Marshel Mading Examiner #: 76677 Date: 2/24/04
Art Unit: 1754 Phone Number 30 Serial Number: 10/083,976
Mail Box and Bldg/Room Location: 9A24 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

_____

Earliest Priority Filing Date: _____

***For Sequence Searches Only** Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

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STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher: ES	NA Sequence (#)	STN: 1 $219.87
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Searcher Location:	Structure (#) 1	Questel/Orbit
Date Searcher Picked Up:	Bibliographic (and)	Dr.Link
Date Completed: 2-26-04	Litigation	Lexis/Nexis
Searcher Prep & Review Time: 15	Fulltext	Sequence Systems
~~Clerical Prep Time:~~	Patent Family	WWW/Internet
Online Time: 80	Other	Other (specify)

PTO-1590 (8-01)

Smith, Teresa (ASRC)

From: Unknown@Unknown.com
Sent: Monday, February 23, 2004 4:21 PM
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ResponseHeader=Commercial Database Search Request

AccessDB#= _____

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MyDate=Mon Feb 23 16:19:16 EST 2004

submitto=STIC-EIC1700@uspto.gov

Name=Maribel Medina

Empno=76677

Phone=571-272-1355

Artunit=1754

Office=rem-9A24

Serialnum=10/083,976

PatClass=423/396

Earliest=2/27/02

Format1=paper

Format3=email

Searchtopic=method of making hexammine cobaltic salt. The salt could be any of chloride, perchlorate, nitrate, and bromide.

(L4) (L3) (L6) (L7)

Comments=

send=SEND

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=> file reg
FILE 'REGISTRY' ENTERED AT 11:23:58 ON 26 FEB 2004
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     FILE 'REGISTRY' ENTERED AT 10:10:20 ON 26 FEB 2004
                  E HEXAMMINE COBALT/CN
L1              1 S E4
L2            855 S 14695-95-5/CRN
                  E HEXAAMMINE COBALT PERCHLORATE/CN
                  E HEXAAMMINECOBALT PERCHLORATE/CN
                  E HEXAAMMINECOBALT(III) PERCHLORATE/CN
L3              1 S E3
                  E HEXAAMMINECOBALT(III) CHLORIDE/CN
L4              1 S E3
                  E HEXAAMMINECOBALT(III) NITRATE/CN
L5             24 S L2 AND NO3
L6              1 S L5 AND 2/NC
                  E HEXAAMMINECOBALT(III) BROMIDE/CN
                  E HEXAAMMINECOBALT(III) TRIBROMIDE/CN
                  E HEXAAMMINECOBALT TRIBROMIDE/CN
L7              1 S E3

     FILE 'HCAPLUS' ENTERED AT 10:23:56 ON 26 FEB 2004
L8            151 S TINGEY D?/AU
L9          13335 S SMITH R?/AU
L10             1 S L8 AND L9

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                  E AMMONIUM HYDROXIDE/CN
L11             1 S E3
                  E AMMONIUM NITRATE/CN
L12             1 S E3
                  E OXYGEN/CN
L13             1 S E3
                  E COBALT NITRATE/CN
L14             2 S E3
                  E COBALT CHLORIDE/CN
L15             2 S E3
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L16             3 S E3
                  E COBALT BROMIDE/CN
L17             2 S E3
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L18      120746 S L11 OR (AMMONIUM# OR NH4)(W)HYDROXIDE# OR NH4OH OR (AQ#
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L20      338906 S L13
L21        4588 S L14 OR (COBALT# OR CO)(W)NITRATE# OR CO2(W)NO3(W)3
L22       31961 S L15 OR L17 OR (COBALT# OR CO)(W)(CHLORIDE# OR DICHLORID
L23         978 S L16 OR (COBALT# OR CO)(W)PERCHLORATE# OR CO(W)CLO4
L24         729 S L4
L25          19 S L4/P
L26          97 S L3
L27           5 S L3/P
L28         148 S L6
L29           4 S L6/P
L30          57 S L7
L31           1 S L7/P
L32          18 S (L24 OR L26 OR L28 OR L30) AND (L18 OR L19) AND (L21 OR
L33           2 S L32 AND L20
L34           9 S L27 OR L29 OR L31 OR L33
L35          30 S (L25 OR L32) NOT L34


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=> d l34 1-9 cbib abs hitstr ind
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application inventors

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L34  ANSWER 1 OF 9  HCA  COPYRIGHT 2004 ACS on STN
139:199530  Synthesis of cobalt hexaammine trinitrate with a defined
     particle size.  Tingey, Douglas R.; Smith, Robert G. (USA).  U.S.
     Pat. Appl. Publ. US 2003161779 A1 20030828, 15 pp.  (English).
     CODEN: USXXCO.  APPLICATION: US 2002-83976 20020227.
AB   A hexammine cobaltic salt, such as hexammine cobaltic nitrate,
     having a selected particle size is prepd. by introducing a cobalt
     salt, esp. cobalt nitrate, and an ammonium salt,
     esp. ammonium nitrate, to an ammonia source,
     such as ammonium hydroxide, in a reaction vessel
     to form Co(NH3)5(H2O)(NO3)2 which is oxidized by
     mol. oxygen to form μ-peroxobis[pentamminecobalt].  The
     μ-peroxobis[pentamminecobalt] is heated to form pentammine-aqua
     cobaltic nitrate.  An activated carbon catalyst and oxygen are added
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to the pentammine-aqua cobaltic nitrate while maintaining the temp. at 95-120°F to yield hexammine cobaltic nitrate having a particle size of 35-60 μ. The hexammine cobaltic nitrate can be used as a gas-generating material for inflatable automotive airbags.

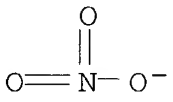
IT **10534-86-8P**, Cobalt(3+), hexaammine-, trinitrate
(synthesis of cobalt hexaammine trinitrate with defined particle size)

RN 10534-86-8 HCA

CN Cobalt(3+), hexaammine-, (OC-6-11)-, trinitrate (9CI) (CA INDEX NAME)

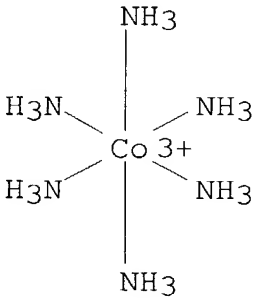
CM 1

CRN 14797-55-8
CMF N O3



CM 2

CRN 14695-95-5
CMF Co H18 N6
CCI CCS



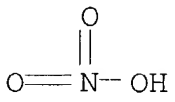
IT **1336-21-6**, **Ammonium hydroxide**
6484-52-2, **Ammonium nitrate**, reactions
7782-44-7, Oxygen, reactions **10141-05-6**, **Cobalt nitrate**
(synthesis of cobalt hexaammine trinitrate with defined particle size)

RN 1336-21-6 HCA

CN Ammonium hydroxide ((NH4)(OH)) (9CI) (CA INDEX NAME)

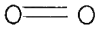
H_4N-OH

RN 6484-52-2 HCA
CN Nitric acid ammonium salt (8CI, 9CI) (CA INDEX NAME)

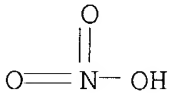


● NH_3

RN 7782-44-7 HCA
CN Oxygen (8CI, 9CI) (CA INDEX NAME)



RN 10141-05-6 HCA
CN Nitric acid, cobalt(2+) salt (8CI, 9CI) (CA INDEX NAME)



●1/2 Co(II)

IC ICM C01G051-12
NCL 423396000
CC 50-1 (Propellants and Explosives)
Section cross-reference(s): 49
ST cobalt hexaammine trinitrate synthesis oxidn catalyst particle size airbag
IT Airbags (protective)
Particle size
Propellants (fuels)
(synthesis of cobalt hexaammine trinitrate with defined particle size)
IT 7440-44-0, Carbon, uses
(activated; synthesis of cobalt hexaammine trinitrate with defined particle size)
IT **10534-86-8P**, Cobalt(3+), hexaammine-, trinitrate

(synthesis of cobalt hexaammine trinitrate with defined particle size)

IT **1336-21-6, Ammonium hydroxide**
6484-52-2, Ammonium nitrate, reactions
7782-44-7, Oxygen, reactions **10141-05-6,**
Cobalt nitrate
(synthesis of cobalt hexaammine trinitrate with defined particle size)

L34 ANSWER 2 OF 9 HCA COPYRIGHT 2004 ACS on STN
133:60964 High-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags. Lundstrom, Norman H.; Begin, Laurence C. (Automotive Systems Laboratory, Inc., USA). U.S. US 6077371 A 20000620, 12 pp. (English). CODEN: USXXAM. APPLICATION: US 1997-797398 19970210.

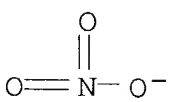
AB High-nitrogen gas generating compns., useful for inflating passenger restraint gas inflator bags, contain, as a secondary oxidant, a nitrogen-rich coordination compd. of general formula (NM)uMx[M'w(NO2)z], in which: (1) NM is a nonmetal cation, (2) M is an alkali metal or alk. earth metal ion, (3) M' is a Group 4-12 coordination (transition) metal, (4) u = 1-4, x = 0-3, w = 1-3, and z = 4 or 6 nitrito or nitro groups, depending on the stoichiometry of NM and M'. The nonmetal (NM) is selected from ammonia, hydrazine, hydroxylamine, and linear and cyclic amines (e.g., guanidine and guanidine derivs., tetrazole derivs., and aminofurazans). The gas-generating compns. generate relatively more gas and less solids, and are safer than azide-based gas-generating compns. Novel methods for the synthesis of nonmetal coordination complexes (e.g., with guanidine and hydrazine) were also presented.

IT **10534-86-8P 13820-83-2P,** Hexaamminecobalt(III) perchlorate
(oxidant, synthesis and use of; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags).

RN 10534-86-8 HCA
CN Cobalt(3+), hexaammine-, (OC-6-11)-, trinitrate (9CI) (CA INDEX NAME)

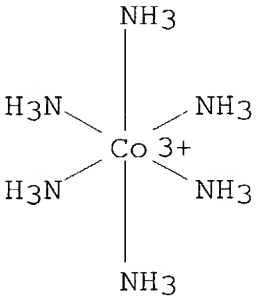
CM 1

CRN 14797-55-8
CMF N O3



CM 2

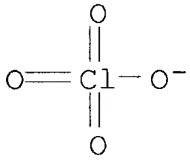
CRN 14695-95-5
CMF Co H18 N6
CCI CCS



RN 13820-83-2 HCA
CN Cobalt(3+), hexaammine-, (OC-6-11)-, triperchlorate (9CI) (CA INDEX NAME)

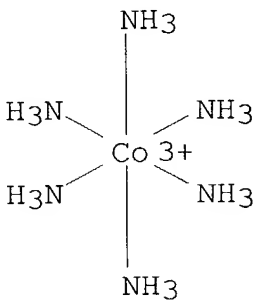
CM 1

CRN 14797-73-0
CMF Cl O4



CM 2

CRN 14695-95-5
CMF Co H18 N6
CCI CCS



IC ICM C06B031-00
ICS C06B033-00
NCL 149037000
CC 50-1 (Propellants and Explosives)
Section cross-reference(s): 29
ST nonazide gas generator propellant vehicle airbag; safety vehicle airbag nonazide propellant; transition metal nitro complex propellant oxidant; nitrite transition metal complex propellant oxidant
IT Polysiloxanes, uses
(C10-20-alkyl Me di-Me, processing aid; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Group VIII element complexes
(Group 10, ballistic modifiers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Group VIII elements
(Group 9, complexes, ballistic modifiers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Metallocenes
(ballistic modifiers, propellants contg.; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Alkali metal complexes
Alkaline earth complexes
Group IB element complexes
Group IIB element complexes
Group IIIA element complexes
Group IIIB element complexes
Group IVB element complexes
Group VIIB element complexes
(ballistic modifiers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)

IT Clays, uses
(bentonitic, inert slag former and coolant; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Group VIII element complexes
(bimetallic, ballistic modifiers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Group VIII element compounds
(chelates, ballistic modifiers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Group IVA element compounds
Group VA element compounds
Group VIA element compounds
(complexes, ballistic modifiers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Nitramines
(cyclic and linear, oxidizers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Polycyanurates
(fuel component; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Airbags (protective)
(high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Carbon black, uses
Transition metal hydrides
(ignition aid; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Aluminates
Borosilicates
Clays, uses
Diatomite
High-silica glasses
Lime (chemical)
Silicates, uses
(inert slag former and coolant; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Coordination compounds
(metal-hydrazine and metal polynitrito metalate, oxidizers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)

IT Cage compounds
(nitramines, oxidizers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Transition metal complexes
(nitrite, oxidants; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Transition metal complexes
(nitrogen heterocyclic, oxidants; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Heterocyclic compounds
(nitrogen, five-membered, fuel component; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Heterocyclic compounds
Heterocyclic compounds
(nitrogen, transition metal complexes, oxidants; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Ammine complexes
Chlorates
Chlorites
Chromates
Halides
Nitrates, uses
Nitrites
Oxides (inorganic), uses
Perchlorates
Peroxysulfates
Sulfates, uses
Sulfides, uses
(oxidizers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Peroxysulfates
(peroxydisulfates, oxidizers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Acetals
(polyacetals, nonpolymeric, processing aid; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)
IT Alcohols, uses
Fluoropolymers, uses
Paraffin waxes, uses
Polycarbonates, uses

Polyoxyalkylenes, uses
Polyoxymethylenes, uses
(processing aid; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)

IT Propellants (fuels)
(solid; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)

IT 79-17-4, Aminoguanidine 108-78-1, 1,3,5-Triazine-2,4,6-triamine, uses 108-78-1D, 2,4,6-Triamino-s-triazine, salts 113-00-8, Guanidine 113-00-8D, Guanidine, derivs. 288-88-0D, 1H-1,2,4-Triazole, derivs. 288-94-8, 1H-Tetrazole 288-94-8D, 1H-Tetrazole, derivs. 288-94-8D, 1H-Tetrazole, metal salts 302-01-2, Hydrazine, uses 302-01-2D, Hydrazine, derivs., uses 471-46-5, Oxamide 506-93-4, Guanidine nitrate 556-88-7, Nitroguanidine 932-64-9, 3-Nitro-1,2,4-triazol-5-one 932-64-9D, 3-Nitro-1,2,4-triazol-5-one, salts 996-98-5, Oxalyldihydrazide 2203-24-9, Triaminoguanidine 2783-98-4, 5,5'-Bitetrazole 2783-98-4D, 5,5'-Bitetrazole, derivs. 3232-84-6, Urazole 4000-16-2, Triaminoguanidine nitrate 4104-85-2, Triaminoguanidine perchlorate 4364-78-7, Diaminoguanidine 4418-61-5, 5-Aminotetrazole 4418-61-5D, 5-Aminotetrazole, metal salts 7803-49-8, Hydroxylamine, uses 7803-49-8D, Hydroxylamine, derivs., uses 7803-57-8, Hydrazine hydrate 10105-42-7, 1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, trihydrazone 10105-42-7D, 1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, trihydrazone, salts 10308-82-4, Aminoguanidine nitrate 10308-82-4D, Hydrazinecarboximidamide, mononitrate, metal salts 10308-84-6, Guanidine perchlorate 10308-86-8, Triaminoguanidine picrate 15066-38-3, Melamine nitrate 15066-38-3D, Melamine nitrate, salts 15179-29-0, Guanidine, nitro-, monoperchlorate 18264-75-0 18264-75-0D, metal salts 18588-16-4, 5-Nitroaminotetrazole 18588-16-4D, 5-Nitroaminotetrazole, metal salts 19465-89-5, Strontium azide 19597-69-4, Lithium azide 20762-60-1, Potassium azide 21531-96-4, 1,2,4-Triazolidine-3,5-dione, 4-amino- 26628-22-8, Sodium azide 27988-97-2, Tetrazole 27988-97-2D, Tetrazole, derivs. 28623-02-1, 1H-Tetrazole, 5,5'-azobis- 28623-02-1D, 1H-Tetrazole, 5,5'-azobis-, metal salts 34815-01-5, 1H-1,2,4-Triazol-3-amine, N-nitro- 34815-01-5D, 1H-1,2,4-Triazol-3-amine, N-nitro-, salts 37160-07-9, Diaminoguanidine nitrate 37306-44-8D, Triazole, derivs. 55011-46-6, 5-Nitrotetrazole 55011-46-6D, 5-Nitrotetrazole, metal salts 142353-07-9, Guanidine, compd. with 5,5'-azobis[1H-tetrazole] (2:1) 150398-60-0, 1H-1,2,4-Triazole, nitro- 150398-60-0D, 1H-1,2,4-Triazole, nitro-, salts 195388-91-1, 1H-Tetrazole, 5,5'-azobis-, diammonium salt 211948-57-1, 5,5'-Bi-1H-tetrazole, manganese(2+) salt (1:1)
(fuel component; high-nitrogen transition metal nitro or nitrito

complexes in non-azide propellants for inflation of vehicle airbags)

IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7440-32-6, Titanium, uses 7440-42-8, Boron, uses 7440-58-6, Hafnium, uses 7440-67-7, Zirconium, uses
(ignition aid; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(inert slag former and coolant; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)

IT 302-01-2DP, Hydrazine, complexes with zinc and nitrate, uses 7440-66-6DP, Zinc, complexes with hydrazine and nitrate, uses **10534-86-8P** 13600-88-9P 13600-98-1P, Sodium cobaltinitrite 13782-01-9P, Cobaltate(3-), hexakis(nitrito-κN)-, tripotassium, (OC-6-11)- **13820-83-2P**, Hexaamminecobalt(III) perchlorate 14040-08-5P 14376-56-8P 14640-47-2P 14652-46-1P, Ammonium hexanitrocobaltate(III) 15363-28-7P 15651-45-3P 31058-64-7P, Copper(2+), tetraammine-, dinitrate 44969-74-6P 61104-87-8P 82312-62-7P 82312-64-9P 277306-02-2P 277306-03-3P 277306-04-4P 277306-05-5P 277306-06-6P 277306-07-7P
(oxidant, synthesis and use of; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)

IT 121-82-4, RDX 144-62-7D, Oxalic acid, salts 1317-33-5, Molybdenum sulfide (MoS2), uses 1317-38-0, Copper oxide, uses 2691-41-0, HMX 6484-52-2, Ammonium nitrate, uses 7631-99-4, Sodium nitrate, uses 7757-79-1, Potassium nitrate, uses 7782-94-7D, Nitramide, salts 7790-98-9, Ammonium perchlorate 10042-76-9, Strontium nitrate 140456-78-6
(oxidizers; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)

IT 57-11-4D, Stearic acid, metal salts 63-42-3 7782-42-5, Graphite, uses 9003-20-7, Poly(vinyl acetate) 10043-11-5, Boron nitride, uses 25322-68-3 110320-40-6, Polypropylene carbonate
(processing aid; high-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags)

L34 ANSWER 3 OF 9 HCA COPYRIGHT 2004 ACS on STN
129:332947 Process for the production of hexaammine **cobalt nitrate** from cobalt salt for gas generants. Bradley, Steve J.; Blau, Reed J.; Lund, Gary K. (Cordant Technologies, Inc., USA). PCT Int. Appl. WO 9846529 A1 19981022, 35 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK,

EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2.
APPLICATION: WO 1998-US7157 19980413. PRIORITY: US 1997-43325 19970415.

AB A process is described for producing hexaammine cobalt (III) nitrate from a cobalt (II) salt, e.g., Co(NO3)2. The product is useful in formulating gas generant compns. In an example, **NH4NO3** 106 lb. (601 mol), aq. Co(NO3)2 170 lb. (196 mol) and **NH4OH** 207 lb. (1600 mol) were added to a 100-gal reactor under stirring for 5 min. and then aged for 68 h at 24-26°C. Oxygen was fed to the reactor at 15 scfh under heating to 35-40°C and stirring in the presence of an activated carbon catalyst 670 g (56 mol) until an absorbance of <0.110 at 505 nm was reached. The resulting gold/orange ppt. was collected by filtration, washed and dried, yielding 97% HACN. Reaction residues can be recycled in the process. The process is energy efficient and generates min. wastes.

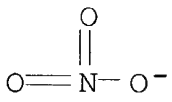
IT **10534-86-8P**
(prodn. of hexaammine **cobalt nitrate** from cobalt salt for gas generants)

RN 10534-86-8 HCA

CN Cobalt(3+), hexaammine-, (OC-6-11)-, trinitrate (9CI) (CA INDEX NAME)

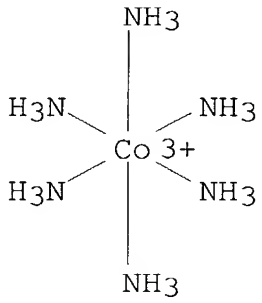
CM 1

CRN 14797-55-8
CMF N O3



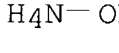
CM 2

CRN 14695-95-5
CMF Co H18 N6
CCI CCS

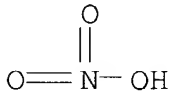


IT **1336-21-6, Ammonium hydroxide**
6484-52-2, Ammonium nitrate, reactions
7646-79-9, Cobalt dichloride, reactions
7782-44-7, Oxygen, reactions **7789-43-7,**
Cobalt dibromide 10141-05-6, Cobalt
dinitrate **13455-31-7,** Cobalt diperchlorate
(prodn. of hexaammine **cobalt nitrate** from
cobalt salt for gas generants)

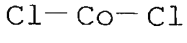
RN 1336-21-6 HCA
CN Ammonium hydroxide ((NH4)(OH)) (9CI) (CA INDEX NAME)



RN 6484-52-2 HCA
CN Nitric acid ammonium salt (8CI, 9CI) (CA INDEX NAME)



RN 7646-79-9 HCA
CN Cobalt chloride (CoCl2) (8CI, 9CI) (CA INDEX NAME)



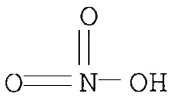
RN 7782-44-7 HCA
CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O═O

RN 7789-43-7 HCA
CN Cobalt bromide (CoBr2) (8CI, 9CI) (CA INDEX NAME)

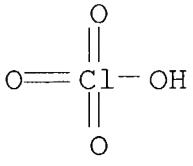
Br—Co—Br

RN 10141-05-6 HCA
CN Nitric acid, cobalt(2+) salt (8CI, 9CI) (CA INDEX NAME)



●1/2 Co(II)

RN 13455-31-7 HCA
CN Perchloric acid, cobalt(2+) salt (8CI, 9CI) (CA INDEX NAME)



●1/2 Co(II)

IC ICM C01G051-12
ICS C06B031-00; C06D005-06
CC 49-8 (Industrial Inorganic Chemicals)
Section cross-reference(s): 50
ST hexaammine **cobalt nitrate** prodn gas generant
IT Gas generators
(agents for; prodn. of hexaammine **cobalt nitrate** from cobalt salt for gas generants)
IT 7440-44-0, Carbon, uses
(activated; prodn. of hexaammine **cobalt nitrate** from cobalt salt for gas generants)
IT **10534-86-8P**

(prodn. of hexaammine **cobalt nitrate** from cobalt salt for gas generants)

IT **1336-21-6, Ammonium hydroxide**
6484-52-2, Ammonium nitrate, reactions
7646-79-9, Cobalt dichloride, reactions
7664-41-7, Ammonia, reactions 7697-37-2, Nitric acid, reactions
7782-44-7, Oxygen, reactions **7789-43-7,**
Cobalt dibromide 7790-98-9, Ammonium perchlorate
10141-05-6, Cobalt dinitrate 12124-97-9, Ammonium bromide
12125-02-9, Ammonium chloride, reactions **13455-31-7,**
Cobalt diperchlorate
(prodn. of hexaammine **cobalt nitrate** from cobalt salt for gas generants)

L34 ANSWER 4 OF 9 HCA COPYRIGHT 2004 ACS on STN
114:198553 Reactions of coordinated imidazole. Oxidation products and ring cleavage in the reactions of RImH3+ (R = pentaamminecobalt) with acetyl hypobromite and hypobromous acid. Blackman, Allan G.; Buckingham, David A.; Clark, Charles R.; Simpson, Jim (Dep. Chem., Univ. Otago, Dunedin, N. Z.). Inorganic Chemistry, 30(7), 1635-42 (English) 1991. CODEN: INOCAJ. ISSN: 0020-1669.

AB Treatment of (NH3)5Co(ImH)3+ (ImH = imidazole) with aq. Br2 in AcO- (or PO43-) buffer at pH 4-6 results in (NH3)5CoX2+ as the only product (HX = parabanic acid = imidazolidine-2,4,5-trione). A crystal structure of [(NH3)5CoX]Cl2.3H2O (orthorhombic, space group P212121, a 6.936(1), b 11.032(3), c 19.652(3) Å, Z = 4; R = 0.0491, Rw = 0.0596) is reported. Formation of (NH3)5CoX2+ appears to occur via initial reaction with Br2(aq) to give 4,5-dibrominated imidazole complex and 2,4,5-tribrominated imidazolato complex, followed by further bromination at C-2 by AcOBr to give a tetrabromo species, which rapidly hydrolyses. The same product results from oxidn. by Cl2(aq) in the absence of AcO- buffer. Treatment of (NH3)5Co(ImH)3+ with HOBr in aq. soln. results in 3 main products. These were identified as (NH3)5CoQ2+ (HQ = dioxamide), (NH3)5Co[N(CHO)2]2+, and (NH3)5CoZ2+ (Z = 2-hydroxyimidazolidine-4,5-dione). A crystal structure of [(NH3)5CoZ](CF3SO3)2 (monoclinic, space group C2/m, a 32.325(20), b 8.037(4), c 7.195(5) Å, β 91.92 (5)°, Z = 4, R = 0.0951, Rw = 0.1034) is reported.

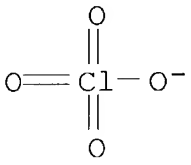
IT **13820-83-2P,** Hexaamminecobalt triperchlorate
(formation of, in hydrolysis of cobalt ammine dioxamido complex)

RN 13820-83-2 HCA

CN Cobalt(3+), hexaammine-, (OC-6-11)-, triperchlorate (9CI) (CA INDEX NAME)

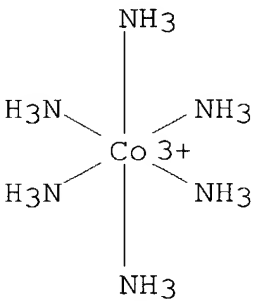
CM 1

CRN 14797-73-0
CMF Cl O4



CM 2

CRN 14695-95-5
CMF Co H18 N6
CCI CCS



CC 78-9 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 75
ST cobalt coordinated imidazole oxidn ring cleavage; crystal structure cobalt ammine parabanato hydroxyimidazolidinedione; structure cobalt ammine parabanato hydroxyimidazolidinedione complex
IT Crystal structure
Molecular structure
(of cobalt ammine complexes with hydroxyimidazolidinedione and parabanate)
IT Oxidation
(of cobalt-coordinated imidazole by bromine in presence of acetate and hypobromous acid)
IT Ring cleavage
(of imidazole by hypobromous acid)
IT **13820-83-2P**, Hexaamminecobalt triperchlorate
(formation of, in hydrolysis of cobalt ammine dioxamido complex)
IT 14403-82-8P
(formation of, in oxidn. of cobalt ammine imidazole complex by hypobromous acid)
IT 2302-30-9, 4,5-Dibromoimidazole 133349-52-7
(oxidn. of cobalt-coordinated, by bromine in presence of acetate followed by hydrolysis)

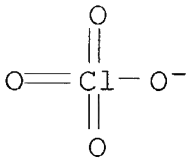
IT 2034-22-2, 2,4,5-Tribromoimidazole
(oxidn. of, by bromine followed by hydrolysis)
IT 132439-25-9 133349-53-8 133349-57-2
(oxidn. of, by bromine in presence of acetate followed by hydrolysis)
IT 15279-15-9, Pentaammineimidazolecobalt triperchlorate
(oxidn. of, by hypobromous acid)
IT 288-32-4, Imidazole, reactions
(oxidn. or ring cleavage of cobalt-coordinated, by bromine or hypobromous acid followed by hydrolysis)
IT 133349-54-9P 133349-66-3P
(prepn. and crystal structure of)
IT 133349-56-1P
(prepn. and hydrolysis of)
IT 27427-52-7P
(prepn. and kinetics of hydrolysis and metathetical reaction of, with lithium chloride)
IT 133349-62-9P
(prepn. and kinetics of hydrolysis of)
IT 133349-61-8P
(prepn. and metathetical reaction of, with sodium dithionate)
IT 133349-65-2P
(prepn. and metathetical reaction of, with sodium triflate)
IT 120-89-8P, Parabanic acid 133349-59-4P 133349-60-7P
133349-63-0P
(prepn. of)
IT 13820-81-0, Pentaammineaquacobalt triperchlorate
(reaction of, with urea)

L34 ANSWER 5 OF 9 HCA COPYRIGHT 2004 ACS on STN
105:237287 Synthesis and characterization of binuclear and trinuclear cobalt(III) complexes with imidazolate bridges. Hawkins, Clifford J.; Horn, Ernst; Martin, Jill; Palmer, Judith A. L.; Snow, Michael R. (Dep. Chem., Univ. Queensland, St. Lucia, 4067, Australia). Australian Journal of Chemistry, 39(8), 1213-20 (English) 1986. CODEN: AJCHAS. ISSN: 0004-9425.
AB [(H3N)5CoLCo(NH3)5]5+ and [(NH3)4Co(LCo(NH3)5)2]7+ (I) (HL = imidazole) were prepd. and characterized by electronic absorption spectra, 1H, 13C, 59Co NMR spectra, and electrochem. data. In I the 2 pentaammineimidazolatocobalt(III) units are coordinated in the cis arrangement to tetraamminecobalt(III). The crystal structure of cis-[(NH3)4Co{LCo(NH3)5}2]Cl2(S2O6)2(OH).3.5H2O is reported. The crystals in the form of orange needles are monoclinic: space group Cc, a 20.18(1), b 17.089(9), c 15.395(7) Å, β 123.76(4)°, Z = 4. The structure was refined to R 0.079.
IT **13820-83-2P**
(prepn. of)
RN 13820-83-2 HCA

CN Cobalt(3+), hexaammine-, (OC-6-11)-, triperchlorate (9CI) (CA INDEX NAME)

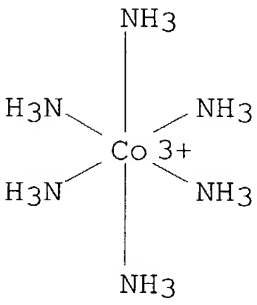
CM 1

CRN 14797-73-0
CMF Cl O4



CM 2

CRN 14695-95-5
CMF Co H18 N6
CCI CCS



CC 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 72, 75

ST cobalt ammine imidazole polynuclear; crystal structure cobalt imidazole trinuclear; structure cobalt imidazole ammine trinuclear; electrochem cobalt imidazole ammine polynuclear; NMR cobalt imidazole ammine polynuclear

IT Transfer coefficient
(in polarog. redn. of cobalt ammine imidazole complexes)

IT Nuclear magnetic resonance
(of carbon-13 and hydrogen in cobalt ammine imidazole binuclear and trinuclear complexes)

IT Reduction, electrochemical
(of cobalt ammine imidazole complexes on mercury)

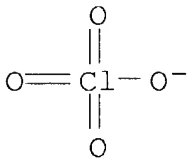
IT Crystal structure
Molecular structure

(of cobalt ammine imidazole-bridged trinuclear complex)
IT 105225-60-3 105453-46-1
(NMR of)
IT 38716-02-8 61159-81-7 105225-58-9 105225-59-0
(polarog. redn. and NMR of)
IT 105453-48-3P
(prepn. and crystal structure of)
IT **13820-83-2P** 105367-03-1P 105456-04-0P
(prepn. of)
IT 61159-82-8
(reaction of, with pentaammine(dimethylsulfoxide)cobalt perchlorate in DMSO)
IT 51667-94-8
(reaction of, with pentaammine(imidazolato)cobalt perchlorate in DMSO)
IT 14695-95-5
(redn. of, polarog.)

L34 ANSWER 6 OF 9 HCA COPYRIGHT 2004 ACS on STN
94:75907 Labile (trifluoromethanesulfonato)cobalt(III) amine complexes. Dixon, Nicholas E.; Jackson, W. Gregory; Lancaster, Martin J.; Lawrance, Geoffrey A.; Sargeson, Alan M. (Res. Sch. Chem., Australian Natl. Univ., Canberra, 2600, Australia). Inorganic Chemistry, 20(2), 470-6 (English) 1981. CODEN: INOCAJ. ISSN: 0020-1669.
AB Facile synthetic routes to Co(III) amine complexes of the labile unidentate trifluoromethanesulfonate anion, Co(NH3)5(OSO2CF3)2+, cis-Co(en)2(OSO2CF3)2+, and fac-Co(dien)(OSO2CF3)3 (dien = diethylenetriamine) are reported. The use of these complexes as synthetic precursors for a range of complexes involving direct solvolysis or reactions in poorly coordinating solvents such as sulfolane or Me2CO is described. Syntheses of Co(NH3)5Ln+ (L = OH2, NH3 MeOH, EtOH, iso-PrOH, MeCN, OP(OMe)3, DMF, Me2SO, urea, NCNH2, AcO-, Cl2CHCO2-) in high yield are reported. The kinetics and the stereochem. course of aquation of the labile trifluoromethanesulfonato complexes and derivs. are reported.
IT **13820-83-2P**
(prepn. of, from cobalt trifluoromethanesulfonato complex)
RN 13820-83-2 HCA
CN Cobalt(3+), hexaammine-, (OC-6-11)-, triperchlorate (9CI) (CA INDEX NAME)

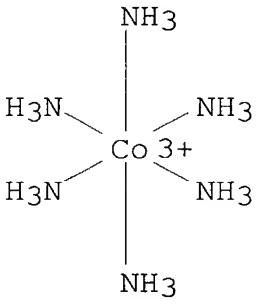
CM 1

CRN 14797-73-0
CMF Cl O4



CM 2

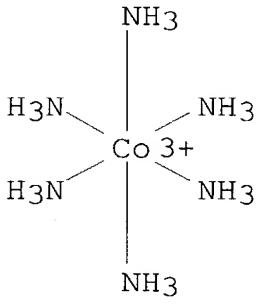
CRN 14695-95-5
CMF Co H18 N6
CCI CCS



CC 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 67
ST fluoromethanesulfonato cobalt amine synthetic precursors; kinetics aquation cobalt trifluoromethanesulfonate complex
IT Kinetics of aquation
(of cobalt trifluoromethanesulfonato complexes)
IT Ammines
(cobalt, with trifluoromethanesulfonato ligands)
IT 14781-34-1 14877-87-3
(nitrosation of, in acetonitrile)
IT 75522-50-8P
(prepn. and use as precursor in prepn. of other cobalt ammine complexes)
IT 75522-52-0P 75522-53-1P
(prepn. and use as precursor in prepn. of other cobalt complexes)
IT 75522-69-9P
(prepn. of)
IT 75557-19-6P
(prepn. of, by nitrosation of azido complex in acetonitrile soln.)
IT 13820-81-0P **13820-83-2P** 14096-70-9P 14523-28-5P
14781-36-3P 15041-41-5P 27427-53-8P 75522-54-2P 75522-55-3P

75522-57-5P 75522-58-6P 75522-59-7P 75522-60-0P 75522-61-1P
75522-63-3P 75522-65-5P 75557-17-4P
(prepn. of, from cobalt trifluoromethanesulfonato complex)
IT 75522-67-7P 75522-71-3P
(prepn. of, from trifluoromethanesulfonato complex)
IT 13859-51-3 14040-32-5 14040-33-6 14215-59-9 15842-50-9
75522-66-6
(reaction of, with trifluoromethanesulfonic acid)
IT 46145-85-1 75522-68-8
(visible spectrum of)

L34 ANSWER 7 OF 9 HCA COPYRIGHT 2004 ACS on STN
83:125449 Products of the reaction of aquapentaamminecobalt(III) ions with ethylenediamine in dimethyl sulfoxide. Ogino, Hiroshi; Tanaka, Nobuyuki (Tohoku Univ., Sendai, Japan). Chemistry Letters (7), 687-90 (English) 1975. CODEN: CMLTAG. ISSN: 0366-7022.
AB From the products of the reaction of [Co(H2O)(NH3)5](ClO4)3 with ethylenediamine (en) in Me2SO, [Co(NH3)5(enH)]Br4 and [Co(NH3)6-2n(en)n]X3 (n = 0, 1, 2, and 3) were isolated. Treatment of [Co(NH3)5(enH)]Br4 with aq. NH3 gave a novel complex, [Co(NH3)5(en)]Br3 contg. a monodentate en ligand.
IT **10534-85-7P**
(prepn. in dimethyl sulfoxide soln.)
RN 10534-85-7 HCA
CN Cobalt(3+), hexaammine-, tribromide, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Br^-

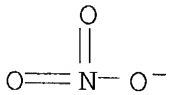
CC 78-7 (Inorganic Chemicals and Reactions)
ST cobalt ammine reaction ethylenediamine sulfoxide; methyl sulfoxide solvent cobalt ammine; amine cobalt complex soln sulfoxide
IT Cobalt, ammine polyamine complexes
(prepn. of, in dimethyl sulfoxide soln.)

IT **10534-85-7P** 14096-77-6P 14883-80-8P 20745-83-9P
56566-35-9P
(prepn. in dimethyl sulfoxide soln.)
IT 56602-11-0P
(prepn. of)
IT 78-90-0 109-76-2 109-81-9 110-60-1 1121-22-8 2783-17-7
(reaction with pentaammineaquacobalt triperchlorate in dimethyl sulfoxide soln.)
IT 13820-81-0
(reactions with diamines in dimethyl sulfoxide soln.)
IT 107-15-3, reactions
(with cobalt ammine in dimethylsulfoxide)

L34 ANSWER 8 OF 9 HCA COPYRIGHT 2004 ACS on STN
72:128231 Ammonolysis of hexamminecobalt(III) ions in liquid ammonia. Schmitz-DuMont, Otto; Hadiwirjatmo, Rachman S. (Anorg.-Chem. Inst., Univ. Bonn, Bonn, Fed. Rep. Ger.). Zeitschrift fuer Anorganische und Allgemeine Chemie, 374(1), 35-42 (German) 1970. CODEN: ZAACAB. ISSN: 0044-2313.
GI For diagram(s), see printed CA Issue.
AB [Co(NH3)6](NO3)3 in liq. NH3 reacts with KNH2 to form a trinuclear Co(III) complex (I) contg. bridging amide groups and di-μ-amido-bis[tetraamminecobalt(III)] nitrate (II). I was cleaved with HOAc-Na2SO4 to give [(H3N)4Co(NH2)2Co(NH3)3H2O](SO4)2.2 H2O (III) and [C3(NH3)6](NO3)3. III was converted to II, which gave trans-[Co(NH3)4Cl2]Cl when treated with HCl and H2SO4. The ammonolysis of [Co(NH3)6](NO3)3 corresponds to the hydrolysis of hexaquocomplexes of trivalent cations.
IT **10534-86-8P**
(prepn. of)
RN 10534-86-8 HCA
CN Cobalt(3+), hexaammine-, (OC-6-11)-, trinitrate (9CI) (CA INDEX NAME)

CM 1

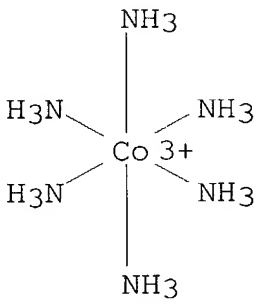
CRN 14797-55-8
CMF N O3



CM 2

CRN 14695-95-5

CMF Co H18 N6
CCI CCS

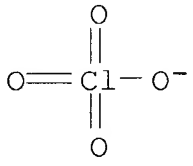


CC 78 (Inorganic Chemicals and Reactions)
ST cobalt ammine complexes bridged amides; ammonolysis Co ammine complexes; ammine Co complexes bridged amides; bridged amides Co ammine complexes; amides bridged Co ammine complexes
IT Ammines
(cobalt)
IT **10534-86-8P** 13820-60-5P 20767-83-3P 20767-84-4P 28288-72-4P
(prepn. of)

L34 ANSWER 9 OF 9 HCA COPYRIGHT 2004 ACS on STN
69:64165 Ligand redox studies. II. Formation of cyano complexes by oxidation of captive thiocyanate. Schug, Kenneth; Miniatas, Birute; Sadowski, Anthony J.; Yano, Tairoku; Ueno, Keihei (Illinois Inst. of Technol., Chicago, IL, USA). Inorganic Chemistry, 7(8), 1669-70 (English) 1968. CODEN: INOCAJ. ISSN: 0020-1669.
AB Solns. contg. 0.00.5-0.0015M [Co(NH3)5NCS](ClO4)2 (I), 0.25M H2SO4, and excess Ce(SO4)2 were allowed to react for several weeks at room temp.; the final solns. were treated with H2O2 and passed through an ion exchange resin column to give [Co(NH3)5CN]2+ and [Co(NH3)6]3+ which were identified on the basis of elemental anal., ir, uv, and visible absorption spectra. Oxidn. of aq. I with excess Na2S2O8 in acidic solns. (0.1M) produces [Co(NH3)6]3+ quant. At lower acidities, [Co(NH3)5CN]2+ was present. The product of the oxidn. of [PdL(NCS)]+ (L = tetraethyldiethylenetriamine) and its thiocyanate analog with H2O2 in approx. neutral soln. was identified as [PdL(CN)]+, on the basis of soln. spectral studies.
IT **13820-83-2P**
(formation of, in oxidn. of pentaammine(isothiocyanato)cobalt(2+) diperchlorate)
RN 13820-83-2 HCA
CN Cobalt(3+), hexaammine-, (OC-6-11)-, triperchlorate (9CI) (CA INDEX NAME)

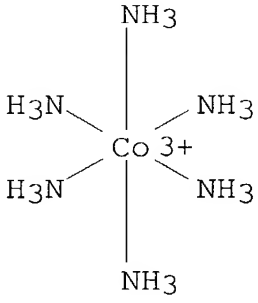
CM 1

CRN 14797-73-0
CMF Cl O4



CM 2

CRN 14695-95-5
CMF Co H18 N6
CCI CCS

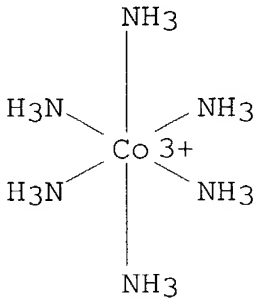


CC 78 (Inorganic Chemicals and Reactions)
ST ligands redox; thiocyanate complexes oxidn; cyano complexes prodn
IT Ammines
(cobalt, oxidn. of isothiocyanato ligand to cyano ligand in)
IT Diethylenetriamine, 1,1,7,7-tetraethyl-, palladium complexes
(oxidn. of isothiocyanato and thiocyanato ligands in, to cyano ligands)
IT 20833-17-4P
(formation of, in oxidn. of its isothiocyanato and thiocyanato analogs)
IT **13820-83-2P** 14216-98-9P
(formation of, in oxidn. of pentaammine(isothiocyanato)cobalt(2+) diperchlorate)
IT 302-04-5, reactions
(oxidn. of, as nitrogen-bonded ligand in cobalt and palladium complexes)
IT 15663-42-0
(oxidn. of, formation of hexaamminecobalt(3+) and

pentaamminecyanocobalt(2+) in)
IT 17549-33-6 17787-29-0
(oxidn. of, formation of its cyano analog in)

=> d l35 1-30 cbib abs hitstr ind

L35 ANSWER 1 OF 30 HCA COPYRIGHT 2004 ACS on STN
134:369703 Purification of cobalt solutions by ion exchange. Singh, Raj P. (OSRAM SYLVANIA, Chemicals Research and Development, Towanda, PA, 14848, USA). EPD Congress 2001, Proceedings of Sessions and Symposia [of] TMS Annual Meeting, New Orleans, LA, United States, Feb. 11-15, 2001, 675-680. Editor(s): Taylor, Patrick R. Minerals, Metals & Materials Society: Warrendale, Pa. (English) 2001. CODEN: 69BEDN.
AB Lewatit TP207, a chelating resin with iminodiacetate functional group, is used for the purifn. of cobalt hexammine chloride soln. for divalent cationic impurities. The method is employed at com. scale in OSRAM SYLVANIA Inc. cobalt chem. prodn. since 1992. It is obsd. that after long use in the purifn. of cobalt hexammine chloride soln., a large no. of resin beads turn black from their original beige color. The purpose of this paper was to characterize these black-colored resin beads for their ion exchange behavior. The resin sample used in this work was an exhausted prodn. TP207 resin contg. large no. of black-colored beads. The results indicated that blackened resin beads can be regenerated to almost full capacity and their ion exchange behavior for the purifn. of cobalt hexammine chloride soln. was comparable to the new resin.
IT **10534-89-1P**, Cobalt hexammine chloride
(purifn. of cobalt solns. by ion exchange and ion exchanger regeneration)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

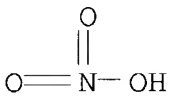
CC 54-2 (Extractive Metallurgy)
ST cobalt soln purifn ion exchanger regeneration
IT Ion exchange
(purifn. of cobalt solns. by ion exchange and ion exchanger regeneration)
IT 57285-14-0, Lewatit tp207
(purifn. of cobalt solns. by ion exchange and ion exchanger regeneration)
IT **10534-89-1P**, Cobalt hexammine chloride
(purifn. of cobalt solns. by ion exchange and ion exchanger regeneration)

L35 ANSWER 2 OF 30 HCA COPYRIGHT 2004 ACS on STN
128:194415 Metal complexes for use as gas generants for inflation of airbags. Lund, Gary K. (Thiokol Corporation, USA; Lund, Gary K.). PCT Int. Appl. WO 9806486 A2 19980219, 97 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1997-US12565 19970725. PRIORITY: US 1996-22645 19960725; US 1997-899599 19970724.
AB Metal complexes are used as gas generating compns. These complexes are comprised of a metal cation template, a neutral ligand contg. hydrogen and nitrogen, and sufficient oxidizing anion to balance the charge of the complex, e.g., hexaamminecobalt(III) nitrate. Such complexes include metal nitrite ammines, metal nitrate ammines, and metal perchlorate ammines, as well as similar hydrazine complexes.

The complexes are used in mixts. with ≥1 cool burning org. nitrogen-contg. compd., e.g., guanidine nitrate. Nitrogen gas and water vapor are produced when the complex combusts. A binder, e.g., guar gum, and co-oxidizer, e.g., basic copper nitrate, can be combined with the metal complexes to improve crush strength of the gas generating compns. and to permit efficient combustion of the binder. The gas generating compns. are used for inflation of automobile airbags.

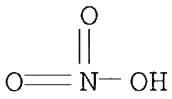
IT **6484-52-2, Ammonium nitrate,** uses
10141-05-6, Cobalt dinitrate
(co-oxidizer; metal complexes as gas generants for airbags)

RN 6484-52-2 HCA
CN Nitric acid ammonium salt (8CI, 9CI) (CA INDEX NAME)



● NH_3

RN 10141-05-6 HCA
CN Nitric acid, cobalt(2+) salt (8CI, 9CI) (CA INDEX NAME)



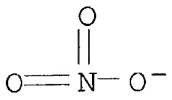
●1/2 Co(II)

IT **10534-86-8 13820-83-2**
(metal complexes as gas generants for airbags)

RN 10534-86-8 HCA
CN Cobalt(3+), hexaammine-, (OC-6-11)-, trinitrate (9CI) (CA INDEX NAME)

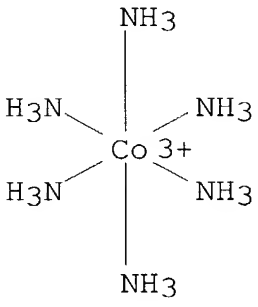
CM 1

CRN 14797-55-8
CMF N O3



CM 2

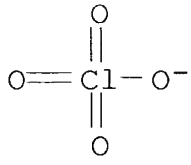
CRN 14695-95-5
CMF Co H18 N6
CCI CCS



RN 13820-83-2 HCA
CN Cobalt(3+), hexaammine-, (OC-6-11)-, triperchlorate (9CI) (CA INDEX NAME)

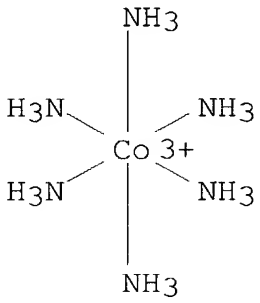
CM 1

CRN 14797-73-0
CMF Cl O4



CM 2

CRN 14695-95-5
CMF Co H18 N6
CCI CCS



IC ICM B01J
CC 50-1 (Propellants and Explosives)
Section cross-reference(s): 59
ST pyrotechnic compn metal complex airbag inflation
IT Polyamides, uses
(binder/igniter; metal complexes as gas generants for airbags)
IT Gums and Mucilages
(binder; metal complexes as gas generants for airbags)
IT Airbags (protective)
Gas generators
Pyrotechnic compositions
(metal complexes as gas generants for airbags)
IT Ammine complexes
Carbon black, uses
Coordination compounds
(metal complexes as gas generants for airbags)
IT 79-06-1D, Acrylamide, derivs., polymers 79-10-7D, Acrylic acid, derivs., polymers 9000-30-0, Guar gum 9003-05-8, Polyacrylamide 9004-70-0, Nitrocellulose 25213-24-5, Vinylacetate-vinylalcohol copolymer
(binder; metal complexes as gas generants for airbags)
IT 1304-76-3, Bismuth oxide Bi2O3, uses 1307-86-4, Cobalt hydroxide Co(OH)3 1308-04-9, Cobalt oxide Co2O3 1308-06-1, Cobalt oxide Co3O4 1308-64-1, Gerhardtite 1309-33-7, Ferric hydroxide 1309-37-1, Iron oxide Fe2O3, uses 1313-27-5, Molybdenum oxide MoO3, uses 1314-11-0, Strontium oxide, uses 1317-38-0, Copper oxide CuO, uses 1319-53-5, Malachite 3251-23-8, Copper dinitrate 5892-10-4, Bismuth carbonate oxide (Bi2(CO3)O2) **6484-52-2, Ammonium nitrate**, uses **10141-05-6**, Cobalt dinitrate 10377-60-3, Magnesium dinitrate 12011-79-9 12052-28-7, Cobalt iron oxide CoFe2O4 12054-48-7, Nickel hydroxide 12158-75-7, Copper hydroxide nitrate (Cu2(OH)3(NO3)) 12207-62-4, Manganese hydroxide oxide Mn(OH)3O 12259-21-1, Ferric oxide hydrate 13473-90-0, Aluminum nitrate 13520-71-3 13565-96-3, Bismuth molybdenum oxide Bi2MoO6 14807-97-7 15478-82-7, Manganese hydroxide oxide Mn(OH)2O 15684-40-9 20427-58-1, Zinc

hydroxide 20427-59-2, Copper hydroxide 21041-93-0, Cobalt hydroxide Co(OH)2 22650-91-5, Tin dioxide hydrate 29135-91-9, Molybdenum trioxide hydrate 51839-24-8 54597-01-2, Cobalt hydroxide nitrate (Co2(OH)3(NO3)) 54652-64-1, Zinc hydroxide nitrate (Zn2(OH)3(NO3)) 67620-94-4, Cobalt copper hydroxide nitrate (CoCu(OH)3(NO3)) 88878-23-3 108929-66-4, Manganese hydroxide nitrate (Mn(OH)2(NO3)) 117448-98-3 120114-08-1 143047-32-9, Copper zinc carbonate hydroxide (Cu1.54Zn0.46(CO3)(OH)2) 143311-87-9, Iron carbonate hydroxide (Fe(CO3)0.12(OH)2.76) 147207-47-4, Cobalt iron carbonate hydroxide (Co0.69Fe0.34(CO3)0.2(OH)2) 162143-30-8, Bismuth magnesium carbonate hydroxide (Bi2Mg(CO3)2(OH)4) 162143-31-9, Cobalt copper carbonate hydroxide (Co0.49Cu0.51(CO3)0.43(OH)1.1) 203641-80-9, Cobalt hydroxide oxide (Co(OH)2O) 203641-81-0, Iron hydroxide oxide (Fe(OH)2O)
(co-oxidizer; metal complexes as gas generants for airbags)

IT 7439-95-4, Magnesium, uses 7440-42-8, Boron, uses 7757-79-1, Potassium nitrate, uses 10042-76-9, Strontium nitrate
(igniter; metal complexes as gas generants for airbags)

IT 7727-37-9, Nitrogen, uses
(metal complexes as gas generants for airbags)

IT 121-82-4, RDX 302-01-2D, Hydrazine, complexes, uses 506-93-4, Guanidine nitrate 1314-62-1, Vanadium oxide (V2O5), uses 7789-78-8, Calcium dihydride **10534-86-8** 13600-88-9 13600-89-0 13600-94-7 13600-97-0 **13820-83-2** 13841-83-3 14404-36-5 15244-74-3 16774-21-3 18918-86-0 19395-00-7 59245-94-2 82434-32-0
(metal complexes as gas generants for airbags)

IT 7440-44-0, Carbon, uses
(powd.; metal complexes as gas generants for airbags)

IT 7732-18-5, Water, uses
(vapor; metal complexes as gas generants for airbags)

L35 ANSWER 3 OF 30 HCA COPYRIGHT 2004 ACS on STN

119:82748 Photocatalytic effects of halogenpentaamminecobalt(III) complexes on hydrogen peroxide photolysis. Lunak, Stanislav; Sedlak, Petr; Lederer, Pavel (Institute of Inorganic Chemistry, Academy of Sciences of Czech Republic, Pelleova 24, Praha, 160 00/6, Czech.). Journal of Photochemistry and Photobiology, A: Chemistry, 72(2), 169-72 (English) 1993. CODEN: JPPCEJ. ISSN: 1010-6030.

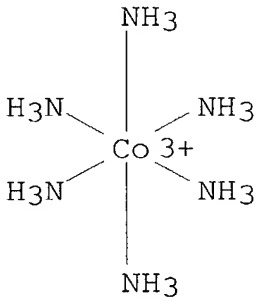
AB The effects of [CoIII(NH3)5L]An compds. (L = **NH3**, **H2O**, F-, Cl-, Br-, I-, CO32-; A = Cl-, Br-, I-, NO3-; n = 1-3) on the thermal decompn. and photolysis of H2O2 (λirr = 365 nm) were studied. Complexes contg. the fluoride anion are almost inactive in terms of their catalytic/photocatalytic effects, whereas those contg. the iodide anion catalyze the thermal reaction effectively. The [Co(NH3)5Cl]Cl2 and [Co(NH3)5Br]Br2 complexes show significant photocatalytic effects including an autocatalytic

reaction and a marked post-irradn. effect. The photocatalytic activity is explained by the photochem. redn. of the central ion and the subsequent formation of the peroxo complexes of the [CoII(NH3)5O2CoII(NH3)5]4+ type.

IT **10534-89-1**
(photocatalytic effects of, in photolysis of hydrogen peroxide)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)

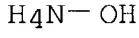


● 3 Cl⁻

IT **1336-21-6, Ammonium hydroxide**
7646-79-9, Cobalt chloride, properties
(thermal decompn. and photolysis of hydrogen peroxide in presence of)

RN 1336-21-6 HCA

CN Ammonium hydroxide ((NH4)(OH)) (9CI) (CA INDEX NAME)



RN 7646-79-9 HCA

CN Cobalt chloride (CoCl2) (8CI, 9CI) (CA INDEX NAME)

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 67

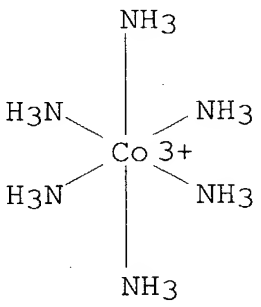
ST photocatalyst halogenpentaamminecobalt complex hydrogen peroxide photolysis; cobalt ammine halo photocatalyst hydrogen peroxide

IT Photolysis catalysts

(halogenpentaamminecobalt(III) complexes as, in photolysis of hydrogen peroxide)
IT Reduction, photochemical
(of halogenpentaamminecobalt(III) complexes, in photolysis of hydrogen peroxide)
IT Photolysis
(of hydrogen peroxide, photocatalytic effects of halogenpentaamminecobalt(III) complexes in)
IT Catalysts and Catalysis
(photochem., halogenpentaamminecobalt(III) complexes as, for hydrogen peroxide)
IT Electron exchange and Charge transfer
(photochem., in halogenpentaamminecobalt(III) complexes, in photolysis of hydrogen peroxide)
IT **10534-89-1** 13600-92-5 13859-51-3 14240-02-9
14283-12-6 14404-37-6 15244-74-3 21336-66-3 36395-86-5
(photocatalytic effects of, in photolysis of hydrogen peroxide)
IT 7722-84-1, Hydrogen peroxide, reactions
(photolysis of, photocatalytic effects of halogenpentaamminecobalt(III) complexes on)
IT **1336-21-6, Ammonium hydroxide**
7447-40-7, Potassium chloride, properties 7553-56-2, Iodine, properties **7646-79-9, Cobalt chloride,**
properties 7681-11-0, Potassium iodide, properties 23103-43-7
(thermal decompn. and photolysis of hydrogen peroxide in presence of)
IT 7758-02-3, Potassium bromide, properties 7789-23-3, Potassium fluoride
(thermal decompn. and photolysis of hydrogen peroxide in presence of)

L35 ANSWER 4 OF 30 HCA COPYRIGHT 2004 ACS on STN
118:9693 Purification of cobalt for manufacture powders free of divalent cationic impurities. Miller, Michael J.; Wolfe, Thomas A.; Cheresnowsky, Michael J.; Kim, Tai K. (GTE Products Corp., USA). U.S. US 5154757 A 19921013, 4 pp. (English). CODEN: USXXAM. APPLICATION: US 1991-783752 19911028.
AB Crude Co contg. heavy-metal and divalent impurities (esp. Cd, Mg, and/or Ca) is processed to prep. **aq.** Co(**NH3**)6Cl3 soln. for intermediate purifn. by cation-exchange resin to remove the divalent metal impurities. The purified Co(NH3)6Cl3 soln. is then adjusted to pH 12.5-13 for dissocn., and the resulting oxide ppt. is conventionally reduced to manuf. Co powder. The purifn. process using Lewatit TP-207 resin in NH4+ form is suitable for removal of typically 98.5 Ca, 99.4 Mg, and 98.8% Cd. The high-purity Co powder can be manufd. using scrap feed dissolved in HCl, and is suitable for alloying.
IT **10534-89-1P**

(purifn. of, by cation exchange, removal of divalent metals by)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



●3 Cl^-

IC ICM B22F009-00
ICS C22B023-00
NCL 075365000
CC 54-3 (Extractive Metallurgy)
ST cobalt powder manuf scrap purifn; cation exchange cobalt purifn powder; ammine **cobalt chloride** purifn resin
IT Waste solids
(scrap, cobalt recovery from)
IT 57285-14-0D, Lewatit TP-207, ammonium-form
(cation exchange with, in removal of divalent metals in manuf. of powd. cobalt)
IT 7440-48-4P, Cobalt, preparation
(prepn. of powd., purifn. of ammine **cobalt chloride** soln. in)
IT **10534-89-1P**
(purifn. of, by cation exchange, removal of divalent metals by)
IT 7439-95-4, Magnesium, miscellaneous 7440-43-9, Cadmium, miscellaneous 7440-70-2, Calcium, miscellaneous
(removal of, in manuf. of powd. cobalt)

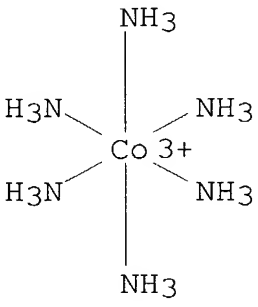
L35 ANSWER 5 OF 30 HCA COPYRIGHT 2004 ACS on STN
116:258556 Method for reducing impurities in hexamminecobalt halide compounds. Husted, Eric F.; Miller, Michael J.; Northrop, Shellie K.; Smith, David T. (GTE Products Corp., USA). U.S. US 5102633 A 19920407, 3 pp. (English). CODEN: USXXAM. APPLICATION: US 1991-703211 19910520.
AB Impurity levels of Ca, Mg, and/or Si in hexamminecobalt halide

compds., e.g., Co(NH3)6Cl3, are reduced by adjusting the pH of an aq. hexamminecobalt halide soln. to ≥9, adding sufficient sol. fluoride to the soln. to form insol. fluoride compds. of Mg and/or Ca, adding Fe3+ ions to form insol. compds. of Fe(OH)3 and Si, and filtering the aq. soln. to give a purified aq. hexamminecobalt halide soln.

IT **10534-89-1P**
(purifn. of, by removing calcium and magnesium and silicon impurities, method for)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



●3 Cl^-

IC ICM C01G051-12

NCL 423143000

CC 49-7 (Industrial Inorganic Chemicals)

ST cobalt hexammine chloride purifn; calcium removal hexamminecobalt chloride; magnesium removal hexamminecobalt chloride; silicon removal hexamminecobalt chloride

IT 7681-49-4, Sodium fluoride, uses
(for calcium and magnesium impurity removal, in hexamminecobalt halide purifn.)

IT 7705-08-0, Ferric chloride, uses
(for silicon impurity removal, in hexamminecobalt halide purifn.)

IT **10534-89-1P**
(purifn. of, by removing calcium and magnesium and silicon impurities, method for)

IT 7439-95-4, Magnesium, miscellaneous 7440-21-3, Silicon, miscellaneous 7440-70-2, Calcium, miscellaneous
(removal of, in hexamminecobalt halide purifn.)

L35 ANSWER 6 OF 30 HCA COPYRIGHT 2004 ACS on STN

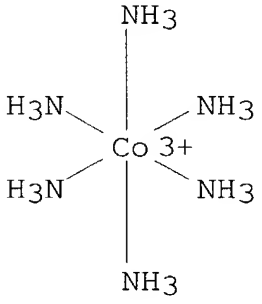
115:293550 Preparation and characterization of N,N-bridged and/or S,S-bridged sexidentate-N2,O2,S2 cobalt(III) complexes. Crystal structure of {(3S,8S)-2,2,9,9-tetramethyl-1,10-dithia-4,7-diazacyclotetradecane-3,8-dicarboxylato}cobalt(III) bromide. Okamoto, Kenichi; Fushimi, Norio; Konno, Takumi; Hidaka, Jinsai (Dep. Chem., Univ. Tsukuba, Tsukuba, 305, Japan). Bulletin of the Chemical Society of Japan, 64(9), 2635-43 (English) 1991. CODEN: BCSJA8. ISSN: 0009-2673.

AB Four kinds of cobalt(III) complexes with N,N-bridged, S,S-bridged, or N,N- and S,S-bridged (cyclo type) sexidentate-N2,O2,S2 ligand contg. two D-penicillaminate moieties were newly synthesized. Of these complexes, the crystal structure of CoLBr.5.5H2O (H2L = (3S,8S)-2,2,9,9-tetramethyl-1,10-dithia-4,7-diazacyclotetradecane-3,8-dicarboxylic acid) was detd. by the x-ray diffraction method. The crystal was orthorhombic, space group P212121, a 16.935(5), b 23.506(7), c 13.057(6) Å, Z = 8, R = 0.0685. The ligand coordinates to the Co atom as the N,N- and S,S-bridged sexidentate-N2,O2,S2. The abs. configurations of the N and S donor atoms are S(N), S(N) and R(S), R(S), resp. The N,N-bridged five-membered ring is the gauche form with the δ conformation and the S,S-bridged seven-membered ring is the twist-chair form with the λ conformation. The other three complexes were characterized by their electronic absorption, 13C NMR, and CD spectra. The N,N- and/or S,S-bridged complexes showed the characteristic absorption and CD spectral behavior in the region of 16-24 + 103 cm-1.

IT **10534-89-1P**
(prepn. and reaction of, with ethylenebis(penicillamine))

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

CC 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 75
ST crystal structure cobalt dithiadiazacyclotetradecanedicarboxylato complex; cobalt ethylenebispenicillaminato dithiadiazacyclotetradecanedicarboxylato complex; azathiacyclotetradecanedicarboxylato cobalt complex; penicillaminato deriv cobalt complex
IT Circular dichroism
(of cobalt alkylenebis(penicillaminato) and dithiadiazacyclotetradecanedicarboxylato complexes)
IT Crystal structure
Molecular structure
(of cobalt dithiadiazacyclotetradecanedicarboxylato complex)
IT 110-52-1, 1,4-Dibromobutane
(cyclocondensation reaction of, with cobalt-coordinated ethylenebis(penicillamine))
IT 137376-91-1P 137490-66-5P 137490-67-6P 137694-84-9P
(prepn. and CD of)
IT 137376-93-3P
(prepn. and crystal structure and CD of)
IT 137525-67-8P, N,N'-Ethylenebis(D-penicillamine)
(prepn. and cyclocondensation of cobalt-coordinated, with bromobutane)
IT 137490-69-8P
(prepn. and mol. structure and CD of)
IT **10534-89-1P**
(prepn. and reaction of, with ethylenebis(penicillamine))
IT 137376-92-2P
(prepn. and reaction with di-Me sulfate and cyclocondensation reaction of, with bromobutane)

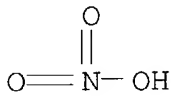
L35 ANSWER 7 OF 30 HCA COPYRIGHT 2004 ACS on STN
115:237631 Cermets for bonding with metals or for forming composites. Kuwabara, Mitsuo (Honda Motor Co., Ltd., Japan). Ger. Offen. DE 3941516 A1 19910620, 32 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1989-3941516 19891215.
AB The cermets comprise sintered ceramics with interdiffused metal compds. or metal. The cermets are prepd. by by pressing powd. mixts. of ceramics or by spray or pressure casting of ceramic slurries, prefiring the green parts, impregnating the prefired parts with a metal salt and/or complex, and by sintering of impregnated parts in an inert or reducing atm. In examples, parts were formed from a powd. mixt. of Si3N4 90, Y2O3 5, and Al2O3 5 wt.%, a powd. mixt. of Si3N4 84, Y2O3 7, Al2O3 4, and ZrO2 5 wt.%, and a powd. mixt. of SiC 81.7, Y2O3 5, Al2O3 7, ZrO2 3, B4C 3, and soot 0.3 wt.%. The parts from the 1st mixt. were dipped 1st into boiling satd. aq. Cr(NO3)3 for 5 min and then into boiling satd. **aq** . Cu(**NH3**)2Cl2, and the impregnated parts were sintered in

Ar-N atm. at 1700° for 2 h. The parts from the 2nd and 3rd mixts. were dipped 1st into satd. aq. Ni(NO3)2 and Zr(NO3)4 and then into satd. aq. Cr(NO3)3 and Cu chloride complex, and the impregnated parts were embedded in powd. Si3N4 and SiC and sintered in Ar-N atm. at 1700° for 2 h.

IT **10141-05-6**, Cobalt dinitrate **10534-89-1**
(impregnation with aq., of prefired ceramic parts, in manuf. of cermets)

RN 10141-05-6 HCA

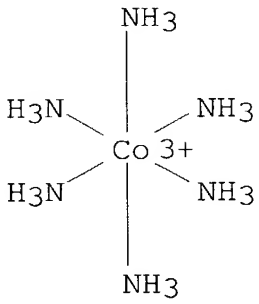
CN Nitric acid, cobalt(2+) salt (8CI, 9CI) (CA INDEX NAME)



●1/2 Co(II)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



●3 Cl⁻

IC ICM C04B041-88
ICS C04B035-65; C04B035-58; C04B035-10; C04B035-14; C04B035-48; C04B035-56; B28B001-00

ICA F01L003-02; F01L001-46; F01D005-28

CC 56-4 (Nonferrous Metals and Alloys)
Section cross-reference(s): 57

ST cermet manuf metal bonding; composite cermet manuf; silicon nitride cermet manuf; nitride silicon cermet manuf; carbide silicon cermet

manuf; boron carbide cermet manuf; yttria cermet manuf metal bonding; alumina cermet manuf metal bonding; zirconia cermet manuf metal bonding; chromium cermet manuf metal bonding; copper cermet manuf metal bonding

IT Cermets
(manuf. of, for bonding with metals or for forming composite parts)

IT 7550-45-0, Titanium tetrachloride, uses and miscellaneous 7718-54-9, Nickel dichloride, uses and miscellaneous 7761-88-8, Silver nitrate, uses and miscellaneous 10025-73-7, Chromium trichloride **10141-05-6**, Cobalt dinitrate 10377-66-9, Manganese dinitrate **10534-89-1** 13138-45-9, Nickel dinitrate 13548-38-4, Chromium trinitrate 13746-89-9, Zirconium tetranitrate 13860-02-1, Titanium tetranitrate 19410-85-6
(impregnation with aq., of prefired ceramic parts, in manuf. of cermets)

IT 137230-04-7P
(manuf. of)

IT 1314-23-4, Zirconium oxide, uses and miscellaneous 7440-48-4, Cobalt, uses and miscellaneous 12069-32-8, Boron carbide 25583-20-4, Titanium nitride
(manuf. of cermets contg.)

L35 ANSWER 8 OF 30 HCA COPYRIGHT 2004 ACS on STN

115:125480 Photochemical behavior of metal complexes intercalated in zirconium phosphate. Rosenthal, G. L.; Caruso, J. (Dep. Chem., Univ. Vermont, Burlington, VT, 05405, USA). Journal of Solid State Chemistry, 93(1), 128-33 (English) 1991. CODEN: JSSCBI. ISSN: 0022-4596.

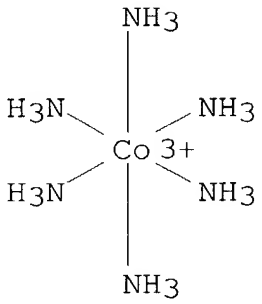
AB Intercalation compds. of α-Zr(HPO4)2·H2O (α-ZrP) with Cr(NH3)63+, Cr(en)33+ Co(NH3)63+, Co(en)33+, and Fe(C5H5)2+ were prepd. by aq. ion exchange with (BuNH3)2Zr(PO4)2. X-ray powder diffraction was used to det. interlayer spacings. Irradn. of intercalated Cr(en)33+ with a Hg vapor lamp (λmax = 254 nm) resulted in a red shift of the ligand field absorption max. from 457 to 560 nm, suggesting loss of all coordinated ethylenediamine and substitution by lattice H2O and PO43-. Irradn. of Cr(NH3)63+ results in a smaller red shift, suggesting kinetic stabilization of the ammine complex by inclusion in the phosphate host. The Fe and Co complexes do not react under similar photolysis conditions, in contrast to their behavior in aq. soln., where reduced complexes result. The potential for use of host lattices in stabilization of unstable species is discussed.

IT **10534-89-1DP**, intercalation reaction product with butylammonium zirconium phosphate
(prepn. of)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX

NAME)



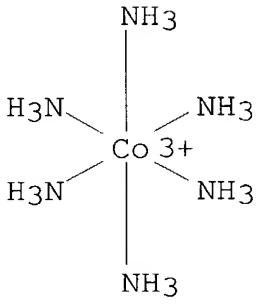
●3 Cl^-

CC 78-3 (Inorganic Chemicals and Reactions)
ST amine cobalt chromium intercalate zirconium phosphate; photolysis transition metal amine intercalate phosphate
IT Photolysis
(of chromium amine complexes intercalated into butylammonium zirconium phosphate)
IT 13933-56-7, Zirconium phosphate hydrate(Zr(HPO4)2.H2O)
(intercalation reaction of, with butylamine)
IT 10534-89-1 12125-80-3, Ferrocenium 13408-73-6, Tris(ethylenediamine)cobalt trichloride 14023-00-8, Tris(ethylenediamine)chromium trichloride 15363-28-7
(intercalation reaction of, with butylammonium phosphate)
IT 109-73-9, Butylamine, reactions
(intercalation reaction of, with zirconium phosphate hydrate)
IT 58973-76-5P
(prepn. and intercalation reaction of, with transition metal amine complexes)
IT 15363-28-7DP, intercalation reaction product with butylammonium zirconium phosphate 58973-76-5DP, intercation reaction product with transition metal complexes
(prepn. and photolysis of)
IT **10534-89-1DP**, intercalation reaction product with butylammonium zirconium phosphate 12125-80-3DP, Ferrocenium, intercalation reaction product with butylammonium zirconium phosphate 13408-73-6DP, Tris(ethylenediamine)cobalt trichloride, intercalation reaction product with Bu ammonium zirconium phosphate 14023-00-8DP, Tris(ethylenediamine)chromium trichloride, intercalation reaction product with butylammonium zirconium phosphate
(prepn. of)

L35 ANSWER 9 OF 30 HCA COPYRIGHT 2004 ACS on STN
115:124366 Electric properties of chromium(III), cobalt(III), and copper(II) ammine complexes in the solid phase. Grotowska, M.; Wojciechowski, W.; Turkmani, S.; Gubanski, A. (Inst. Inorg. Chem. Metall. Rare Elements, Tech. Univ. Wroclaw, Wroclaw, 50-370, Pol.). Materials Science, 15(4), 71-6 (English) 1989. CODEN: MSCJDS. ISSN: 0137-1339.

AB Elec. properties of polycryst. [Cr(NH3)6]Cl3, [Co(NH3)6]Cl3, and [Cu(**NH3**)4]SO4.**H2O**, were investigated at 150-300 K. By plotting the ln 1/σ vs. 1/T, the activation energy was detd. The results are interpreted in terms of MO theory.

IT **10534-89-1**, Hexaamine **cobalt trichloride**
(elec. cond. of)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)

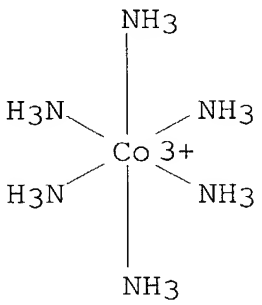


●3 Cl^-

CC 76-1 (Electric Phenomena)
Section cross-reference(s): 78
ST cond ammine complex chromium cobalt copper; MO ammine complex chromium cobalt copper
IT Electric conductivity and conduction
Molecular orbital
(of chromium and cobalt and copper ammine complexes)
IT Ammines
(chromium, elec. cond. of)
IT Ammines
(cobalt, elec. cond. of)
IT Ammines
(copper, elec. cond. of)
IT 7664-41-7

(ammines, chromium, elec. cond. of)
IT 7664-41-7
(ammines, cobalt, elec. cond. of)
IT 7664-41-7
(ammines, copper, elec. cond. of)
IT 10380-29-7 **10534-89-1**, Hexaamine **cobalt trichloride** 13820-25-2, Hexaammine chromium trichloride
(elec. cond. of)

L35 ANSWER 10 OF 30 HCA COPYRIGHT 2004 ACS on STN
113:190391 Coordination complexes of cobalt: inorganic synthesis in the general chemistry laboratory. Williams, Gregory M.; Olmsted, John, III; Preksa, Andrew P., III (California State Univ., Fullerton, CA, 92634, USA). Journal of Chemical Education, 66(12), 1043-5 (English) 1989. CODEN: JCEDA8. ISSN: 0021-9584.
AB A lab. expt. is described involving the synthesis and spectral studies of a series of [Co(NH3)5L] complexes (L = **NH3**, Cl-, **H2O**, NO2-, and ONO-) that not only gives general chem. students an introduction to inorg. synthesis but also allows them to conduct a systematic study on the effect of different ligands on absorption spectra. The authors warn that the 30% H2O2 used in the synthesis of [Co(NH3)5Cl]Cl2 is a strong oxidizing agent that will cause severe burns and bleaching of skin and clothing.
IT **10534-89-1P**
(synthesis of, lab. expt. in)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)

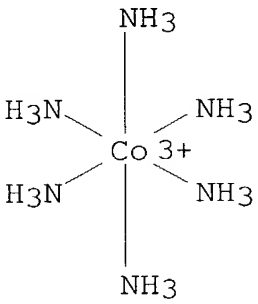


●3 Cl^-

CC 20-4 (History, Education, and Documentation)
Section cross-reference(s): 78
ST cobalt pentamine complex synthesis lab expt; safety cobalt complex

synthesis expt
IT Laboratory experiment
(in cobalt pentamine complexes synthesis)
IT Safety
(in hydrogen peroxide handling, in cobalt pentamine complexes synthesis lab. expt.)
IT 7722-84-1, Hydrogen peroxide, reactions
(in cobalt complex prepn., in lab. expt.)
IT 7664-41-7, Ammonia, uses and miscellaneous
(in cobalt pentamine complexes prepn., lab. expt. in)
IT 7791-13-1
(reaction of, with ammonia and ammonium chloride and hydrogen peroxide, in lab. expt. in cobalt complex prepn.)
IT 12125-02-9, Ammonium chloride, reactions
(reaction of, with ammonia and **cobalt chloride** and hydrogen peroxide, in lab. expt. in cobalt complex prepn.)
IT **10534-89-1P** 13782-02-0P 13815-11-7P 13820-80-9P 13859-51-3P
(synthesis of, lab. expt. in)

L35 ANSWER 11 OF 30 HCA COPYRIGHT 2004 ACS on STN
103:214180 Hexaammine complexes of chromium(III) and cobalt(III). A spectral study. Brown, D. R.; Pavlis, R. R. (Div. Sci. Math., Coll. Virgin Islands, St. Thomas, 00802, Virgin I. (U. S.)). Journal of Chemical Education, 62(9), 807-8 (English) 1985. CODEN: JCEDA8. ISSN: 0021-9584.
AB An undergraduate coordination chem. expt. is described, involving the synthesis and spectral measurements of hexamminecobalt(III) chloride and hexaamminechromium(III) nitrate.
IT **10534-89-1P**
(prepn. and spectrum of, lab. expt. in)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



●3 Cl^-

CC 20-4 (History, Education, and Documentation)
Section cross-reference(s): 66
ST chromium hexaammine complex lab expt; cobalt complex prepn spectra expt
IT Ultraviolet and visible spectra
(of chromium and cobalt hexaammine complexes prepn. and spectra)
IT **10534-89-1P** 15363-28-7P
(prepn. and spectrum of, lab. expt. in)

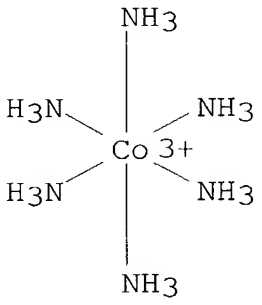
L35 ANSWER 12 OF 30 HCA COPYRIGHT 2004 ACS on STN
99:12844 Electroplating of chromium-cobalt alloys with chemical coloring. Taviere, Jean Andre (Fr.). Fr. Demande FR 2514036 A1 19830408, 7 pp. (French). CODEN: FRXXBL. APPLICATION: FR 1981-18902 19811007.
AB Electroplating with chem. coloring allows one to obtain colored electroplates having an excellent mech. resistance and corrosion resistance with the coatings contg. a combination of a Co(III) complex and a Cr(III) complex, having formulas of Co(NH3)6Cl3 and (CrX)6Cl3 (where X is ≥1 ligands selected from **H2O**, **NH3** and CN-), resp. Electrolysis of the combined complex [e.g. (**NH3**)5Co(III) - **H2O** - Cr(II)(H2O)5]4+ is conducted at 20-50° between a Pb anode and a cathode made up of the pieces to be treated in an ammoniacal soln. of **CoCl2** and CrCl2 in the presence of an active C catalyst. In an example, an alloy of Co and Cr was deposited on a cathode consisting of a stainless steel 18/8 wire in a bath contg.: **CoCl2** 0.2, NH4Cl 0.1, NH3 0.5 M, and H2O2 1 g/L in H2O 2 L at 35-50°, c.d. 5-20 A/dm2, voltage 7-15 V, and with active C present (20 g/L). Before applying any d.c., CrCl2 2 and NaCN 6 M were added to the bath. The coating deposited on the wire was a Cr-Co, mat blue-violet alloy of high hardness colored with complexes, not

showing any cracking under strong magnification.

IT **10534-89-1**
(in coloring of chromium-cobalt alloy electroplates)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

IC C25D009-10; C25D011-14

CC 72-8 (Electrochemistry)

ST electroplating chem coloring; chromium cobalt alloy colored electroplate

IT 11114-92-4
(electroplating of, with chem. coloring)

IT **10534-89-1** 13820-25-2 13820-87-6 14842-83-2
(in coloring of chromium-cobalt alloy electroplates)

IT 7722-84-1, uses and miscellaneous
(in electroplating of chromium-cobalt alloys with chem. coloring)

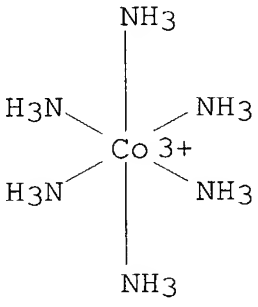
L35 ANSWER 13 OF 30 HCA COPYRIGHT 2004 ACS on STN

98:219524 Structure and sorption properties of iron(III) hydroxide oxide in processing of Cuban laterite ores. Frades, L. (Khim. Fak., Mosk. Gos. Univ., Moscow, USSR). Deposited Doc., VINITI 575-82, 245-9 Avail. VINITI (Russian) 1981.

AB The sorption of 60Co-labeled [Co(NH3)6]Cl3 by FeOOH at 30° was studied in connection with the undesirable copptn. of Co with the FeOOH during the NH3-carbonate leaching of laterite ores for the recovery of Ni. A model is proposed for the structure of FeOOH primary elements and sorption of [Co(NH3)6]3+ ions based on the dimensional commensurability of the sorbate and sorbent.

IT **10534-89-1P**
(sorption of, by iron hydroxide in nickel recovery from laterite ores)

RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)

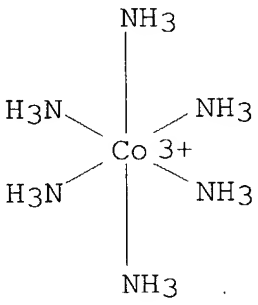


● 3 Cl^-

CC 54-2 (Extractive Metallurgy)
ST cobalt copptn iron laterite leaching; nickel recovery laterite cobalt loss; iron hydroxide cobalt copptn
IT Laterite
(nickel recovery from)
IT 7440-02-0P, preparation
(recovery of, from laterite ores, cobalt loss in)
IT 7440-48-4P, preparation
(recovery of, from laterite, loss by cobalt pptn. with iron hydroxide in)
IT **10534-89-1P**
(sorption of, by iron hydroxide in nickel recovery from laterite ores)

L35 ANSWER 14 OF 30 HCA COPYRIGHT 2004 ACS on STN
98:52661 The study of a cobalt complex - a laboratory project. Loehlin, James H.; Kahl, Stephen B.; Darlington, Jeanne A. (Wellesley Coll., Wellesley, MA, 02181, USA). Journal of Chemical Education, 59(12), 1048-51 (English) 1982. CODEN: JCEDA8. ISSN: 0021-9584.
AB A 2nd-semester undergraduate introductory lab. course, which includes an 8-wk project involving synthesis and qual. and quant. anal. of either Co(NH3)5Cl3 or Co(NH3)6Cl3, is described. The prepn., purifn., and anal. give the student experience with synthesis, recrystn., gravimetric anal., and volumetric anal. using both acid-base and redox methods. In addn., experience is gained with qual. anal., detg. an empirical formula from percent compn. by wt., and obtaining theor. and actual yields.
IT **10534-89-1P**

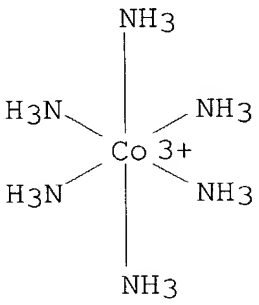
(prepn. and qual. and quant. anal. of, semester-long lab. expt. in)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

CC 20-4 (History, Education, and Documentation)
ST lab expt semester project; cobalt complex lab expt
IT Transition metals, compounds
(complexes, lab. expt. in, semester-long project of)
IT Laboratory experiment
(in transition metal complexes, semester-long project for)
IT **10534-89-1P** 13859-51-3P
(prepn. and qual. and quant. anal. of, semester-long lab. expt. in)

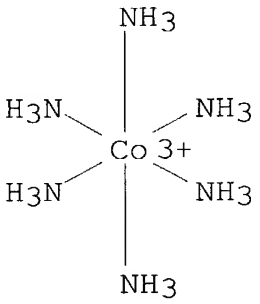
L35 ANSWER 15 OF 30 HCA COPYRIGHT 2004 ACS on STN
97:148306 Cobalt metal powder. Gingerich, Richard G. W.; Scheithauer, Richard A. (GTE Products Corp., USA). U.S. US 4329169 A 19820511, 4 pp. (English). CODEN: USXXAM. APPLICATION: US 1980-179332 19800818.
AB Co fine powder is prepd. by heating aq. cobaltic ammine halide to ≥120° to decomp. and form a ppt., then filtration, and redn. by H. Thus, **CoCl2** soln. from WC-Co scrap was reacted with **NH4OH**, aerated, heated, ppt. settled, filtered off Co(NH3)5Cl2 and Co(NH3)6Cl3, and reduced to fine Co powder by H at .apprx.500°.
IT **10534-89-1P**
(formation and decompn. of, in cobalt fine powder prepn.)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



●3 Cl⁻

IC B22F009-00
NCL 075000500AA
CC 54-2 (Extractive Metallurgy)
Section cross-reference(s): 77
ST cobalt fine powder prepn; ammine chloride cobalt powder
IT **10534-89-1P** 14874-58-9P
(formation and decompn. of, in cobalt fine powder prepn.)
IT 7440-48-4P, preparation
(prepn. of fine powd., from cobaltic ammine halides)
IT 1333-74-0, reactions
(redn. by, in cobalt fine powder prepn.)

L35 ANSWER 16 OF 30 HCA COPYRIGHT 2004 ACS on STN
95:154533 Recovering cobalt. Vanderpool, Clarence D.; MacInnis, Martin B.; McClintic, Robert P.; Gingerich, Richard G. W. (GTE Products Corp., USA). U.S. US 4278463 19810714, 6 pp. (English). CODEN: USXXAM. APPLICATION: US 1980-135050 19800328.
AB The Co in aq. by-product solns. contg. NH3 and a halide is recovered by addn. of Al metal to ppt. the Co. Thus, Al was added to the acidic by-product streams from the prepn. of Co(NH3)5Cl3, resulting in the evolution of H gas and formation of black ppt. When sepd. by filtering, the ppt. contained 1 part Co/1000 filtrate at pH 3 or 6, but 0.41 at pH 7. The ppt. was conventionally reduced with H to Co metal powder.
IT **10534-89-1P**
(prepn. of, cobalt recovery in, aluminum for)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

IC C22B023-04
NCL 75-.5A
CC 54-2 (Extractive Metallurgy)
ST cobalt recovery pptn aluminum; halide ammonia cobalt pptn aluminum
IT 7429-90-5, uses and miscellaneous
(cobalt recovery by, from waste ammine halide solns.)
IT 13859-51-3
(cobalt recovery from solns. contg., aluminum addn. for)
IT **10534-89-1P**
(prepn. of, cobalt recovery in, aluminum for)
IT 7440-48-4P, preparation
(recovery of, from wastewater contg. ammonia and halide, aluminum addn. for)

L35 ANSWER 17 OF 30 HCA COPYRIGHT 2004 ACS on STN
93:189878 Cobaltic hexammine compounds and cobalt metal powder. Gingerich, Richard G. W.; McClintic, Robert P. (GTE Products Corp., USA). U.S. US 4218240 19800819, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1979-38970 19790514.

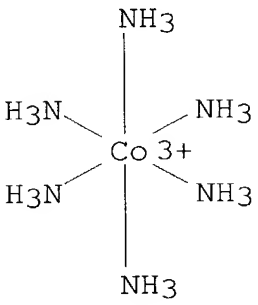
AB Co is recovered by treating aq. (leach) solns. contg. NH3 and Co ions with an acid in the presence of a catalyst, such as activated C, to convert the Co ions to a Co hexammine ion, which is pptd. by addn. of a hydroxide, and the ppt. is reduced to fine Co powder. Thus, 250 mL of a 28% **NH4OH** soln. was mixed with 200 mL of aq. **CoCl2** soln. in 2.8M HCl (contg. 120 Co/L and 0.5-10% other metals) and 4.9 g activated charcoal was added. The mixt. at pH 9.7 was stirred for 7 h at 40°. The suspension was treated with 250 mL of 36% HCl, cooled to 3°, and filtered. A mixt. of yellow hexamminecobalt (III) chloride and charcoal was obtained, washed with 6M HCl, adjusted to pH 8, filtered, treated with 36% HCl, cooled, and filtered to give 98% yield of pure

hexammine cobalt (III) chloride. The product is treated with NaOH at 92° to ppt. Co oxide hydrate, which was filtered and reduced with H at 500° to give Co powder.

IT **10534-89-1P**
(prepn. of, from cobalt leach solns.)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



●3 Cl^-

IC C22B023-04

NCL 75-.5AA

CC 54-2 (Extractive Metallurgy)

ST cobalt recovery ammine prepn

IT **10534-89-1P**
(prepn. of, from cobalt leach solns.)

IT 7440-48-4P, preparation
(recovery of, from leach solns. by prepn. of hexamminecobalt trichloride and formation of oxide and redn. with hydrogen)

L35 ANSWER 18 OF 30 HCA COPYRIGHT 2004 ACS on STN

89:122118 Complexes of cobalt containing ammonia or ethylenediamine. Hexaamminecobalt(III) salts. Lindholm, Robert D. (Res. Lab., Eastman Kodak Co., Rochester, NY, USA). Inorganic Syntheses, 18, 67-74 (English) 1978. CODEN: INSYA3. ISSN: 0073-8077.

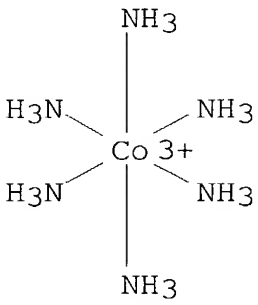
AB [Co(NH3)6](OAc)3 was prepd. by bubbling air and NH3 into a soln. of Co(OAc)2 and NH4OAc in MeOH contg. activated C; after removal of the C catalyst the product was pptd. by addn. of Me2CO. This same procedure, followed by treatment with HCl after catalyst removal, gave [Co(NH3)6]Cl3. Cis-[Co(NH3)4(NO2)2]NO3 was prepd. by reaction of [Co(CO3)(NH3)4]NO3 with aq. HNO3 followed by addn. of NaNO2. Trans-[Co(NH3)4(NO2)2]Cl was prepd. by adding **aq. NH3** and **aq. CoCl2** to a soln. contg.

NaNO2 and NH4Cl and then bubbling air through the mixt. Heating an aq. mixt. of trans-[Co(en)2(NO2)2]NO3 and HCl until NO2 evolution ceased gave a ppt. of trans-[**CoCl2**(en)2]NO3.

IT **10534-89-1P**
(prepn. of)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

CC 78-7 (Inorganic Chemicals and Reactions)

ST cobalt ammine ethylenediamine nitro complex; safety cobalt nitro ammine

IT Safety
(in cobalt ammine nitro complex sepn.)

IT Ammines
(cobalt)

IT **10534-89-1P** 13782-03-1P 13782-04-2P 14023-85-9P 14587-94-1P
(prepn. of)

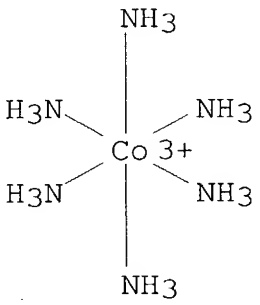
L35 ANSWER 19 OF 30 HCA COPYRIGHT 2004 ACS on STN

89:89651 Complexes and their magnetic properties. A curriculum for secondary level II. Mackenroth, Wolfgang; Reinert, Gerd Bodo (Hamburg, Fed. Rep. Ger.). Praxis der Naturwissenschaften, Chemie, 27(5), 128-32 (German) 1978. CODEN: PXNCAP. ISSN: 0342-8737.

AB A description of metal complexes, esp. their magnetic properties, is given for use in a secondary level II curriculum, based on the examples of [Co(NH3)6]Cl3 and [Co(NH3)6]Cl2. The prepn. of these complexes for lab. or lecture demonstrations is described, as well as the electron configuration in the ligand field through measurements of the magnetic moment.

IT **10534-89-1P**

(prepn. and magnetic properties of, education in)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



●3 Cl⁻

CC 20-3 (History, Education, and Documentation)
ST education metal complex magnetic property; hexamminecobalt chloride magnetic property education
IT Education
(in metal complexes and their magnetic properties)
IT Electron configuration
Magnetic property and Magnetism
(of metal complexes, education in)
IT Metals, compounds
(complexes, education in)
IT **10534-89-1P** 13874-13-0P
(prepn. and magnetic properties of, education in)

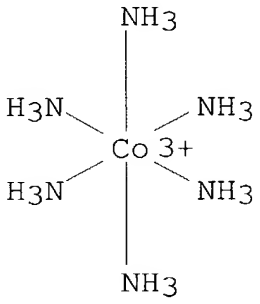
L35 ANSWER 20 OF 30 HCA COPYRIGHT 2004 ACS on STN
88:81784 Insoluble silver/cobalt complex and process for its formation. White, W. W.; Parmeter, R. R. (UK). Research Disclosure, 164, 39-40 (English) 1977. CODEN: RSDSBB. ISSN: 0374-4353.
AB An insol. Ag/Co complex, hexaamminecobalt(III) dithiosulfatoargentate(I), is formed by the reaction of a Ag thiosulfate complex and a hexaamminecobalt complex. This reaction to form the insol. complex can be advantageously utilized in the recovery of Ag, or in the detn. of Ag concn., in aq. solns. contg. a Ag thiosulfate complex, such as photog. fixing and bleach-fixing solns. contg. a Ag thiosulfate complex, such as photog. fixing and bleach-fixing solns. The complex also has bactericidal and fungicidal properties. Thus, a com. photog. fixing soln. contg. Na2S2O3 as the fixing agent was used to process films until the

soln. was spent. The concn. of Ag in the spent soln. was detd. by at. absorption anal. and by pptn. of hexaamminecobalt(III) dithiosulfatoargentate(I). Results obtained indicated a Ag concn. of 2.9 g/L in the spent soln. as compared to a value of 2.8 g/L obtained by at. absorption anal.

IT **10534-89-1P**
(reaction of, with sodium dithiosulfatoargentate(I) in silver recovery from photog. processing solns.)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)
Section cross-reference(s): 5, 63

ST hexaamminecobalt dithiosulfatoargentate silver recovery photog; bactericide hexaamminecobalt dithiosulfatoargentate; fungicide hexaamminecobalt dithiosulfatoargentate

IT Photographic processing
(fixing solns. for, silver recovery from, pptn. of hexaamminecobalt(III) dithiosulfatoargentate(I) in)

IT Bactericides, Disinfectants and Antiseptics
Fungicides and Fungistats
(hexaamminecobalt(III) dithiosulfatoargentate(I) as)

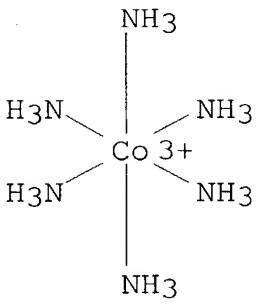
IT 65574-35-8
(bactericide, fungicide, and in recovery of silver from photog. processing solns.)

IT 53819-72-0P
(reaction of, with hexaamminecobalt(III) trichloride in silver recovery from photog. processing solns.)

IT **10534-89-1P**
(reaction of, with sodium dithiosulfatoargentate(I) in silver

recovery from photog. processing solns.)
IT 7440-22-4P, preparation
(recovery of, from photog. processing solns., pptn. of hexaamminecobalt(III) dithiosulfatoargentate(I) in)

L35 ANSWER 21 OF 30 HCA COPYRIGHT 2004 ACS on STN
83:186248 Method of incorporating photographic color couplers in hydrophilic colloids. Anon. (Kodak Ltd., London, UK). Research Disclosure, 136, 24-5 (English) 1975. CODEN: RSDSBB. ISSN: 0374-4353.
AB Photographic color couplers contg. sulfonic or carboxylic acid groups or their alkali metal or ammonium salts are incorporated into hydrophilic colloids by forming an ion pair of the coupler with a cationic Co(III) or Cr(III) complex and dispersing the resultant solid in a hydrophilic colloid soln. either per se or as a soln. in a coupler solvent.
IT **10534-89-1P**
(photog. color coupler incorporation in hydrophilic colloid by formation of ion pair with)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



●3 Cl⁻

CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)
ST color coupler incorporation emulsion; gelatin color coupler incorporation
IT Photographic emulsions
(color coupler incorporation in, by complex formation with cobalt or chromium)
IT Photographic couplers
(incorporation of, in hydrophilic colloids, as ion pairs with

cationic complexes)

IT 1,3-Benzenedicarboxylic acid, 5-[[4,5-dihydro-4-[[4-[(octadecylamino)carbonyl]phenyl]thio]-1-phenyl-1H-pyrazol-3-yl]amino]-, anion, ion pair with hexaamminecobalt(III)
1,3-Benzenedicarboxylic acid, 5-[ethyl[[1-hydroxy-4-[[[[3-(3-pentylphenoxy)propyl]amino]carbonyl]phenoxy]-2-naphthalenyl]carbonyl]amino]-, anion, ion pair with hexaamminecobalt(III)
(formation of, for incorporation of photog. color coupler in hydrophilic colloid)

IT 5489-37-2
(dispersion of color coupler, in hydrophilic colloids, as ion pair complex with hexaammine cobalt)

IT 57104-62-8 57116-69-5 57116-70-8
(dispersion of color coupler, in hydrophilic colloids, as ion pair complex with hexaamminecobalt)

IT 57111-14-5P 57111-16-7P
(formation of, for incorporation of photog. color coupler in hydrophilic colloid)

IT **10534-89-1P**
(photog. color coupler incorporation in hydrophilic colloid by formation of ion pair with)

L35 ANSWER 22 OF 30 HCA COPYRIGHT 2004 ACS on STN

79:11782 Photoelectron spectra induced by x-rays of above 600 nonmetallic compounds containing 77 elements. Joergensen, Christian Klixbull; Berthou, Herve (Den.). Matematisk-Fysiske Meddelelser - Kongelige Danske Videnskabernes Selskab, 38(15), 93 pp. (English) 1972. CODEN: KDVSAK. ISSN: 0023-3323.

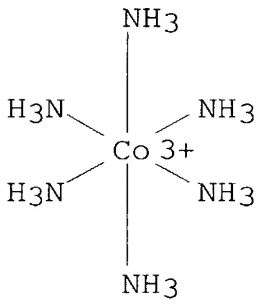
AB The photoelectron spectra induced by Al (1486.6 eV) or Mg (1253.6 eV) x-ray excitation of >600 compds. indicate that the chem. shift (dI) of the ionization energy (I) of the inner shells is not only dependent on the oxidn. state of a given element, but also on the ligands. Even for a fixed oxidn. state, dI was 2-8 eV in a comparative study of all elements which are neither noble gases nor strongly radioactive. However, this conclusion is, to some extent, modified by reproducible pos. potentials on nonconducting samples which were measured at 1-4V in typical cases and compared with the theory for almost ionic cubic crystals and with expts. with mixts. of nonconducting powd. MgF_2, $BaSO_4$, and ThF_4 and metals such as Au, Tl_2O_3, and CuS. The widths and highly varying intensities of photoelectron signals are theor. discussed. The d and f shells of transition and post-transition group atoms give relatively intense signals even for I 8-30 eV since the 1486.6-eV photons most readily ionize shells with small av. radii. Interesting relations can be established with electron transfer spectra and optical electronegativities. Special satellites occur in Cu(II), La(III) and other lanthanide compds. The adaptation of the electronic d. of

the neighbor atoms in the ionized system contribute to dI which cannot be explained exclusively on the basis of fractional at. charges and the Madelung potential.

IT **10534-89-1P**
(prepn. of)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

CC 73-5 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)

ST photoelectron spectra inorg compd; bonding inorg photoelectron spectra; x ray photoelectron spectra inorg

IT Bond
(in inorg. compds., x-ray photoelectron spectra in relation to)

IT Photoelectron spectra
(of inorg. compds., x-ray-induced)

IT Nitrosyls
Rare earth metals, compounds
Transition metals, compounds
(photoelectron spectra of)

IT Inorganic compounds
(photoelectron spectrum of, induced by x-rays)

IT Ammines
(transition metal, photoelectron spectra of)

IT Valence
(x-ray photoelectron spectra of inorg. compds. in relation to)

IT Antimony oxide (Sb2O3), solid solns. with tin oxide
Cerium oxide (CeO2), solid solns. with thorium oxide and uranium oxide
Praseodymium oxide (PrO2), solid solns. with thorium dioxide
Tantalum oxide (Ta2O5), solid solutions with tungsten oxide

Thorium oxide (ThO2), solid solns. with cerium oxide and uranium oxide
Thorium oxide (ThO2), solid solns. with praseodymium dioxide
Tin oxide (SnO2), solid solns. with antimony oxide
Uranium oxide (UO2), solid solns. with cerium oxide and thorium oxide
(photoelectron spectrum of)

IT 61-73-4 64-20-0 68-05-3 75-58-1 143-66-8 147-14-8
311-28-4 506-61-6 513-78-0 526-78-3 534-16-7 534-17-8
537-01-9 544-92-3 554-13-2 587-26-8 595-90-4 598-63-0
632-69-9 814-94-8 1304-56-9, properties 1304-76-3 1306-19-0
1306-23-6, properties 1306-24-7 1306-38-3 1308-04-9
1308-38-9, properties 1308-87-8 1308-96-9 1309-37-1,
properties 1309-60-0 1310-53-8 1312-43-2 1312-81-8
1313-13-9, properties 1313-27-5, properties 1313-96-8
1313-97-9 1313-99-1, properties 1314-06-3 1314-13-2,
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1344-57-6, properties 1344-59-8 1470-61-7 1661-03-6
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21548-73-2 21563-00-8 21679-46-9 21774-03-8 21790-80-7
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22722-62-9 22723-52-0 22886-66-4 23081-32-5 23105-69-3
23340-47-8 23408-20-0 23793-19-3 24687-02-3 24687-03-4
25659-31-8 25749-74-0 26037-24-1 26156-59-2 26258-19-5
26291-88-3 26292-39-7 26292-40-0 26427-69-0 27685-51-4
28300-74-5 29090-30-0 29335-83-9 29831-95-6 29860-78-4
30111-44-5 31147-84-9 31386-68-2 32740-79-7 33849-39-7
33908-66-6 33991-54-7 34156-31-5 34249-18-8 34417-22-6
34417-23-7 35171-64-3 35759-56-9 35759-58-1 35759-65-0
35759-66-1 36447-91-3 36491-43-7 36535-39-4 37240-55-4
37488-13-4
(photoelectron spectrum of)

IT 38139-15-0 38433-42-0 39394-96-2 39395-09-0 39395-45-4
39395-46-5 39395-57-8 39395-61-4 39395-62-5 39395-63-6
39395-91-0 39399-77-4 39406-96-7 39407-05-1 41119-82-8
41724-71-4 41724-83-8 41815-98-9 41875-39-2 41875-40-5
41875-41-6 41875-43-8 41875-49-4 41875-50-7 41875-51-8
41875-60-9 41875-61-0 41875-64-3 41875-65-4 41875-66-5
41875-67-6 41875-69-8 41875-70-1 41875-72-3 41875-73-4
41875-76-7 41875-77-8 41875-80-3 41876-09-9 41876-10-2
41876-11-3 41876-12-4 41876-13-5 41876-14-6 41876-15-7
41876-17-9 41876-18-0 41876-19-1 41876-20-4 41876-21-5
41876-22-6 41876-23-7 41876-26-0 41876-27-1 41876-29-3
41876-30-6 41884-48-4 41898-43-5 41898-48-0 41898-49-1
41898-50-4 41898-51-5 41898-52-6 41898-53-7 41898-54-8
41898-55-9 41898-56-0 41898-58-2 41898-59-3 41898-60-6
41898-61-7 41898-62-8 41898-63-9 41909-62-0 41909-64-2
41909-65-3 41909-66-4 41909-70-0 41909-72-2 41909-73-3
41909-74-4 41909-83-5 41909-84-6 41909-86-8 41909-87-9
41909-88-0 41909-89-1 41909-90-4 41909-92-6 41909-95-9
41944-01-8 41948-74-7 41984-94-5 41991-48-4 42030-50-2
49553-27-7 52580-79-7 58856-18-1
(photoelectron spectrum of)

IT 7429-90-5, properties 7429-91-6, properties 7439-88-5,
properties 7439-89-6, properties 7439-91-0, properties
7439-92-1, properties 7439-93-2, properties 7439-94-3,
properties 7439-95-4, properties 7439-96-5, properties
7439-97-6, properties 7439-98-7, properties 7440-00-8,
properties 7440-02-0, properties 7440-03-1, properties
7440-04-2, properties 7440-05-3, properties 7440-06-4,
properties 7440-09-7, properties 7440-10-0, properties
7440-15-5, properties 7440-16-6, properties 7440-17-7,
properties 7440-18-8, properties 7440-19-9, properties
7440-20-2, properties 7440-21-3, properties 7440-22-4,
properties 7440-23-5, properties 7440-24-6, properties

7440-25-7, properties 7440-27-9, properties 7440-28-0, properties 7440-29-1, properties 7440-30-4, properties 7440-31-5, properties 7440-32-6, properties 7440-33-7, properties 7440-36-0, properties 7440-38-2, properties 7440-39-3, properties 7440-41-7, properties 7440-42-8, properties 7440-43-9, properties 7440-45-1, properties 7440-46-2, properties 7440-47-3, properties 7440-48-4, properties 7440-52-0, properties 7440-53-1, properties 7440-54-2, properties 7440-55-3, properties 7440-56-4, properties 7440-57-5, properties 7440-58-6, properties 7440-60-0, properties 7440-61-1, properties 7440-62-2, properties 7440-64-4, properties 7440-65-5, properties 7440-66-6, properties 7440-67-7, properties 7440-69-9, properties 7440-70-2, properties 7440-74-6, properties 7553-56-2, properties 7704-34-9, properties 7723-14-0, properties 7726-95-6, properties 7727-37-9, properties 7782-41-4, properties 7782-49-2, properties 13494-80-9, properties
(photoelectron spectrum of, in various compds.)

IT **10534-89-1P**
(prepn. of)

L35 ANSWER 23 OF 30 HCA COPYRIGHT 2004 ACS on STN

78:115903 Stability constants of some outer-sphere type complexes involving cobalt(III). Ilcheva, L.; Beck, Mihaly T. (Inst. Phys. Chem., Kossuth Lajos Univ., Debrecen, Hung.). Proc. Symp. Coord. Chem., 3rd, Volume 1, 89-97. Editor(s): Beck, Mihaly T. Akad. Kiado: Budapest, Hung. (English) 1970. CODEN: 22RCAZ.

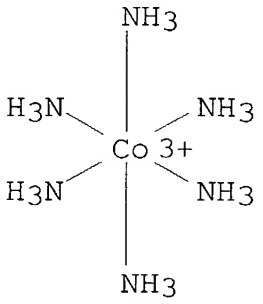
AB In aq. solns. with ionic strength μ = 1M (KF) at 22°, the stability consts. of the outer-sphere complexes Co(bip)3.NCS2+ (bip = bipyridine), Co(bip)3.I2+, and Co(phen)3,I2+ (phen = phenanthroline) are K = 1.73, 1.50, and 1.69, resp. With increasing μ for μ = 1-6M (KF), K for Codip)3.NCS2+ went through a min. of 1.00 at μ =2.5M, and then increased to 2.30 at μ = 6M; with μ = 1M (KCl), K = 0.95 for Co(dip)3.NCS2+. In aq. solns. contg. Co(NH3)63+ and concn. c = 0.1-1.0M of ligand (X-) at 35°, the equil. const. (K) corresponding to formation of the outer-sphere complexes, Co(NH3)63+ + X- ↔ Co(NH3)6.X2+, decreased with increasing c, where K = 1.20-3.14, 0.97-2.44, and 1.23-1.97 for X- = Cl-, N3-, and NCS-, resp. In aq. soln. with μ = 1.6 (NaClO4) and pH 3-9,8 at 30°, the stability const. (K = 4.7) for the outer-sphere complex formed between d-Co(en)33+ and diethylenetriaminepentaacetic acid was essentially independent of pH.

IT **10534-89-1P**
(formation of)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX

NAME)



●3 Cl^-

CC 68-2 (Phase Equilibriums, Chemical Equilibriums, and Solutions)
ST stability cobalt complex; isothiocyanato dipyridine cobalt stability; iodo phenanthroline cobalt stability; chloro ammine cobalt stability; azido ammine cobalt stability; ethylenediamine cobalt complex stability; ammine cobalt complex stability
IT Ammines
(cobalt, formation of outer sphere complexes of)
IT **10534-89-1P** 14523-20-7P 22418-37-7P
(formation of)
IT 16569-46-3
(outer-sphere complex formation of, with diethylenetriaminepentaacetic acid)
IT 67-43-6
(outer-sphere complex formation of, with tris(ethylenediamine)cobalt ion)
IT 14126-08-0 41928-26-1 41930-54-5
(stability of)

L35 ANSWER 24 OF 30 HCA COPYRIGHT 2004 ACS on STN
69:72296 Effect of chemical combination on the asymmetry of the Kα lines of cobalt. Mande, Chintamani; Nigavekar, A. S.; Chivate, Pushpa (Univ. Poona, Poona, India). Indian Journal of Physics, 41(12), 897-901 (English) 1967. CODEN: IJPYAS. ISSN: 0019-5480.
AB The asymmetry indexes of the Co Kα1 and Kα2 lines were detd. for Co, **CoCl2**, diquinolinium Co(II) chloride (solid and liquid), Co(II) oxinate (hydrated and anhyd.), Co2O3, [Co(NH3)6]Cl3, Na3Co(NO2)6, and [Co(**NH3**)5-**H2O**]2(C2O4)3 by using x-ray fluorescence techniques. The indexes for both lines decrease for the higher oxidn. states of Co. The magnitude of these indexes may depend on the no. of 3d electrons in

the central atom, rather than on its surroundings. The change in asymmetry of these lines was attributed to exchange polarization effects.

IT **7646-79-9**, properties **10534-89-1**
(spectrum (x-ray) of, Kα line asymmetry in)

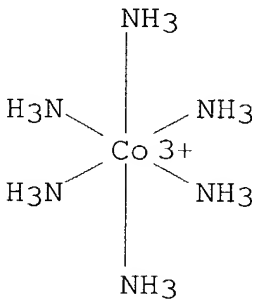
RN 7646-79-9 HCA

CN Cobalt chloride (CoCl2) (8CI, 9CI) (CA INDEX NAME)

Cl—Co—Cl

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl⁻

CC 73 (Spectra and Other Optical Properties)

ST x ray lines Co asymmetry; cobalt x ray lines asymmetry

IT Ammines
(cobalt, x-ray spectra of)

IT Bonds
(in cobalt complexes and compds., Kα x-ray spectral line asymmetry in relation to)

IT Spectra, x-ray
(of cobalt complexes and compds., Kα line asymmetry in)

IT 8-Quinolinol, cobalt complex
(x-ray spectrum of)

IT 1308-04-9 **7646-79-9**, properties **10534-89-1**
13600-98-1 13978-88-6 21350-40-3 34788-85-7
(spectrum (x-ray) of, Kα line asymmetry in)

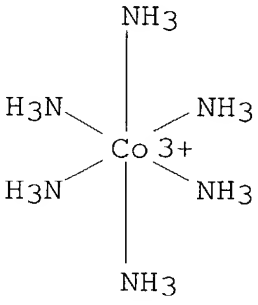
IT 7440-48-4, properties
(spectrum (x-ray) of, in cobalt complexes and compds., Kα line asymmetry in)

IT 34788-85-7, properties
(x-ray transmission by, integral characteristics of anomalous)

L35 ANSWER 25 OF 30 HCA COPYRIGHT 2004 ACS on STN
68:71382 Hydrometallurgical processing of nickeliferous laterite ore. V. Separation of cobalt and nickel by precipitation of cobalt as an ammine complex salt. Ono, Kenji; Matsushima, Tomoo; Kamon, Noboru (Tohoku Univ., Sendai, Japan). Tohoku Daigaku Senko Seiren Kenkyusho Iho, 23(1), 21-4 (Japanese) 1967. CODEN: TDSSA2. ISSN: 0040-876X.

AB The sepn. of Co from Ni by pptg. Co, [Co(NH3)6]Cl3, was studied. Many factors such as the concn. of NH3 and Cl in soln., the addn. of activated charcoal, and the oxidn. conditions were detd. In addn. to the above expts., the soly. of [Co(NH3)6]Cl3 in various NH3 and Cl solns. was detd.

IT **10534-89-1P**
(formation and soly. of, in ammonia and chlorine, cobalt sepn. from nickel in relation to)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



●3 Cl^-

CC 54 (Extractive Metallurgy)
ST PPTN CO AMMINE SALTS; COBALT NI SEPN; NICKEL CO SEPN; LATERITE ORES TREATMENT
IT **10534-89-1P**
(formation and soly. of, in ammonia and chlorine, cobalt sepn. from nickel in relation to)
IT 7440-02-0, uses and miscellaneous
(sepn. of, from cobalt by ammine complex)
IT 7440-48-4P, preparation
(sepn. of, from nickel by ammine complex)

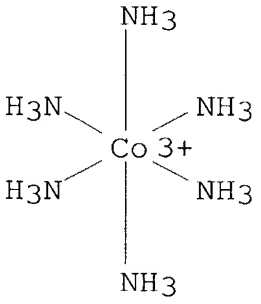
L35 ANSWER 26 OF 30 HCA COPYRIGHT 2004 ACS on STN
67:11891 Interaction of poly(vinylamine) with metal salts in aqueous solutions. Tolmachov, V. M.; Lomako, L. A.; Dinh Suang Dinh (A. M. Gor'kii Khar'kovsk. Gos. Univ., Kharkov, USSR). Vysokomolekulyarnye Soedineniya, Seriya B: Kratkie Soobshcheniya, 9(3), 211-14 (Russian) 1967. CODEN: VYSBAI. ISSN: 0507-5483.

AB Poly(vinylamine) (I) (pK = 9.4 ± 0.2) formed solid water-insol. complexes with metal salts when 1 vol. of a 1% I soln. was boiled with 1 vol. of a 10% metal salt soln. By analysis, the following metal-II ratios were obtained: (reagent and ratio given) ZnSO4, 1:2; NiSO4, 1:4.0; CdSO4, 1:3.5; CoSO4, 1:4.0; CuSO4, 1:2.4; **CoCl2** → H2O2, 1:5.2. Tentative structures (II and III) (R = **H2O**, **NH3**, or OH-, M = metal) are proposed for the complexes. Pycnometer d. (d.) and magnetic susceptibility (x) measurements gave the following effective magnetic moments (μx) according to Simek (S. and Navratil, CA 54: 10406c); (complex, d, x, μE given). I, 1.15, 0.86, -; I.Zn, 1.30, 0.28, -; I.Cd, 1.36, 0.29, -; I.Cu 1.34, 1.77, 1.4; I.Ni, 1.14, 4.76, 3.0; I,Co2+, 1.20, 1.21, 1.7; I.Co3+, 1.29, 1.83, 1.9; I.Cu(**NH3**)4SO4.**H2O**, 1.45, 6.03, 1.9; Ni(NH3)6Cl2, 1.30, 18.05, 3.2; Co(NH3)6Cl3, 1.53, 0.89, -, -.

IT **10534-89-1**
(magnetic properties of)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

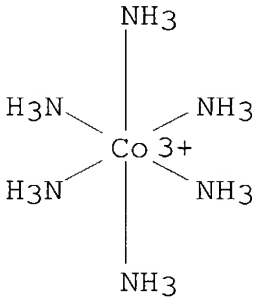
CC 35 (Synthetic High Polymers)

ST POLYVINYLAMINE METAL IONS INTERACTIONS

IT Ammines
(metal complexes, magnetic properties of)

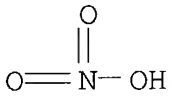
IT Cadmium, with vinylamine polymers
Cobalt, with vinylamine polymers
Copper, with vinylamine polymers
Nickel, complexes with vinylamine polymers
Vinylamine, polymers, metal complexes
Zinc, complexes with vinylamine polymers
(magnetic properties of)
IT 10380-29-7 10534-88-0 **10534-89-1**
(magnetic properties of)

L35 ANSWER 27 OF 30 HCA COPYRIGHT 2004 ACS on STN
66:7985 Derivatographic study of the reaction of hexaamminecobalt(III) chloride with alkali nitrates. Pfeifer Flora, Terez (Forschungsinst. Chem. Schwerind., Vesprem, Hung.). Mikrochimica Acta (4-5), 915-25 (German) 1966. CODEN: MIACAQ. ISSN: 0026-3672.
AB Derivatographic study combined with data obtained from heating mixts. of [Co(NH3)6]Cl3 and nitrates of all the alkali metals and NH4+, showed the formation of [MCo(NH3)1.5NO3.Cl]Cl2, where M represents the alkali metal. The decompn. reactions started at lower temps. in the mixts. than in the components sep.; the mechanisms vary with the reagent present in excess.
IT **10534-89-1**
(reactions of, with alkali metal nitrates)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

IT **6484-52-2**, reactions
(with hexaamminecobalt(3+) trichloride)
RN 6484-52-2 HCA
CN Nitric acid ammonium salt (8CI, 9CI) (CA INDEX NAME)



● NH_3

CC 78 (Inorganic Chemicals and Reactions)
ST COBALT AMMINE CHLORIDES REACTIONS; AMMINES **CO CHLORIDES** REACTIONS; ALKALI NITRATES REACTIONS CO COMPLEXES; CHLORIDES CO AMMINES REACTIONS; NITRATES REACTIONS CO COMPLEXES
IT Ammines
(cobalt)
IT Cobalt potassium chloride nitrate (KCoCl3(NO3)), sesquiammoniate
Potassium **cobalt chloride** nitrate (KCoCl3(NO3)), sesquiammoniate
(prepn. of)
IT **10534-89-1**
(reactions of, with alkali metal nitrates)
IT 7789-18-6 7790-69-4
(reactions of, with hexaamminecobalt(3+) trichloride)
IT 7757-79-1, reactions
(with hexaamminecobalt(2+) trichloride)
IT **6484-52-2**, reactions 7631-99-4, reactions
(with hexaamminecobalt(3+) trichloride)

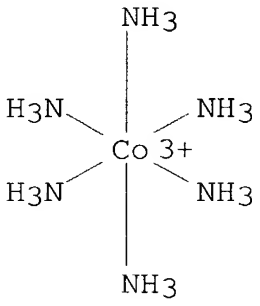
L35 ANSWER 28 OF 30 HCA COPYRIGHT 2004 ACS on STN
64:65227 Original Reference No. 64:12175d-h Preparation of complex salts of cobalt, copper, and chromium. Wang, Chih-Shih Bull. Inst. Chem., Acad. Sinica, No. 9, 63-8 (English) 1964.
AB To a brownish violet mixt. of 100 ml. distd. H2O, **CoCl2**.6H2O 120 g., and NH4Cl 80 g. was added activated carbon 2 g. and concd. **NH4OH** 250 ml.; compressed air was bubbled into the resulting mixt. for 5 hrs. The brownish black ppt., after sepn. was dissolved in 14 ml. concd. HCl in 750 ml. of distd. H2O on a water bath. To the warm filtrate was added 200 ml. of concd. HCl. On cooling, [Co(NH3)6Cl3 ppt. was filtered off, washed with EtOH, and dried. A soln. of NH4Cl 100 g. and NaNO2 135 g. in 750 ml. of distd. H2O was added to **CoCl2**.6H2O 90 g. in 250 ml. of distd. H2O; then 500 ml. of 20% **NH4OH** was added. Oxidn. was attained by bubbling compressed air into the mixt. for 4 hrs. The mixt. was allowed to evap. at room temp. for 15 days. The crystals were filtered, washed with distd. H2O until no Cl- was detected in the filtrate. Pure Co(NH3)3(NO2)3 crystals were obtained by dissolving the crude product in 450 ml. of distd. H2O and 10 ml. of HOAc at 93° and then cooling to 5°.

Crystals (blue prisms or plates) of Cu(dip)(NO3)2.3H2O were prepd. at 5° from a soln. of Cu-(NO3)2.3H2O 7.8169 g. and α,α'-dipyridyl(dip) 5.0519 g. in hot distd. H2O. The product was recrystd. from H2O. Cu(DMG)-Cl2 was obtained by the addn. of dimethylglyoxime (DMG) 3 g. to CuCl2.2H2O 12.7 g. in 100 ml. of distd. H2O. Evapn. to dryness of a hot distd. H2O soln. of K2Cr2O7 9.5 g. K2CrO4.H2O 11.5 g., and oxalic acid 27.5 g. yielded K3[Cr(C2O4)3]. cis-K[Cr(C2O4)2(H2O)2] (I) was prepd. by the addn. of a few drops of distd. H2O to a mixt. of K2Cr2O7 and H2C2O4.2H2O followed by standing for 24 hrs. trans-K[Cr(C2O4)2(H2O)2] (II) was obtained by the addn. of K2Cr2O7 15 g. to a hot distd. H2O soln. of 45 g. of H2C2O4.2H2O. After the evolution of heat, the mixt. became dark green to which was added a few drops of distd. H2O. Cooling in the refrigerator changed it into the colloid state. cis-K2[Cr(OH)(C2O4)2(H2O)] was prepd. by adding 25 ml. of distd. H2O and 11 ml. of 50% KOH to 50 g. of the ground I. The trans compd. was obtained by heating a distd. H2O soln. of II 20 g. and KOAc 30 g. followed by cooling. The reaction of Zn, 12N HCl, and CrCl3.6H2O was carried out in a breaker immersed in ice and NaCl. **NH4OH** (7.2N) and NH4Cl were added to the mixt. through which air was bubbled until gray green [Cr2(OH)(**NH3**)10].Cl5. **H2O** (III) pptd. Pure product was obtained by repeating 3 times the process of dissolving the ppt. in 0.001N HCl and pptg. it with dropwise addn. of 12N HCl. Addn. of 95% EtOH to a soln. of III in 2N **NH4OH** yielded [Cr2(OH)(NH3)9OH]Cl4.2H2O. When the soln. of III in 2N **NH4OH** was allowed to stand for 30 min. and 12N HCl added, [Cr2(OH)(**NH3**)9H2]Cl5.**H2O**(IV) was pptd. When IV was added to a soln. of NH4SCN and NH4Cl, [Cr2(OH)(NH3)9(SCN)]Cl4.2H2O (V) was collected. When IV was dried at 90° for 12 hrs., 1 mol. of H2O was eliminated. When NH2C2H4NH2 was added to V, [Cr2O(NH3)9(NH2C2H4NH2)]Cl4 (VI) was obtained. Addn. of 12N HCl to VI yielded [Cr2(OH)(NH3)9NH2C2H4NH3]Cl6.4H2O.

IT **10534-89-1**, Cobalt, hexaamminecobalt trichloride (prepn. of)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)

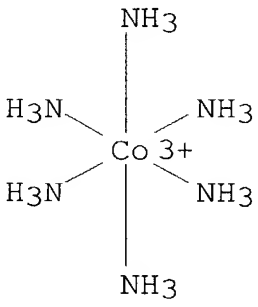


● 3 Cl^-

CC 14 (Inorganic Chemicals and Reactions)
IT Ammines
(chromium and Co)
IT Chromate(III), dioxalatodiaquo-, cis-
Chromate(III), dioxalatodiaquo-, trans-
Chromate(III), hydroxydioxalatoaquo-, cis-
Chromate(III), hydroxydioxalatoaquo-, trans-
IT Chromium compounds, dihydroxynonaamminedichromium tetrachloride, dihydrate
Chromium compounds, hydroxyaquononaamminedichromium pentachloride, hydrate
Chromium compounds, hydroxydecaamminedichromium pentachloride, hydrate
Chromium compounds, hydroxynonaammine[ethylenediaminium(H)]dichromium hexachloride, tetrahydrate
Chromium compounds, hydroxythiocyanat ononaam mine dichrom i um tetrachloride, dihydrate
Chromium compounds, oxononaammine(ethylenediamine)dichromium tetrachloride
Potassium dioxalatodiaquochromate(III), cis-
Potassium dioxalatodiaquochromate(III), trans-
Potassium hydroxydioxalatoaquochromate(III), K2[Cr(OH)(C2O4)2(H2O)], cis-
Potassium hydroxydioxalatoaquochromate(III), K2[Cr(OH)(C2O4)2(H2O)], trans-
Potassium trioxalatochromate(III), K3[Cr(C2O4)3], compd. with H3[Cr(C2O4)3] and strychnine (1:2:6)
(prepn. of)
IT 107-15-3, Ethylenediamine
(chromium complexes)
IT 95-45-4, Glyoxime, dimethyl- 366-18-7, 2,2'-Bipyridine

(copper complexes)
IT **10534-89-1**, Cobalt, hexaamminecobalt trichloride
13600-88-9, Cobalt, trinitrotriammine- 14281-62-0, Copper, dichloro(dimethylglyoxime)- 15054-01-0, Chromate(III), trioxalato- 15635-35-5, Copper, dinitrato(2,2'-bipyridine)-, trihydrate
(prepn. of)

L35 ANSWER 29 OF 30 HCA COPYRIGHT 2004 ACS on STN
64:16860 Original Reference No. 64:3050a-b Peculiarities and shape of the polarographic double wave in solutions of proteins (according to Brdicka). Mairanovskii, S. G. (Inst. Org. Chem., Moscow). Elektrokhimiya, 1(10), 1263-7 (Russian) 1965. CODEN: ELKKAX. ISSN: 0424-8570.
AB The catalytic waves of egg albumin with Co(NH3)6Cl3 in an **NH4OH**-NH4Cl buffer were studied. The shape of the superficial wave (1st wave) was described by the 2 relations E = E1/2 - (RT/αnα;F)ln (i/ilim. -i); ilim. = 0.88 exp [-9(E - EM)2] according to the Frumkin theory of adsorption (EM is potential of max. adsorption). The shape of the vol. wave (2nd wave) was described by the relation E = E'1/2 - (RT/α'n'αF)ln(i'/i'lim. - i'), i'lim. being independent of the potential; E1/2 = -1.22 v., EM = -1.40 v., E'1/2 = -1.463 v., (RT/α'n'αF) = 0.052 v.
IT **10534-89-1**, Cobalt, hexaamminecobalt trichloride
(in ovalbumin polarography, H catalytic waves and)
RN 10534-89-1 HCA
CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl⁻

CC 15 (Electrochemistry)
IT Catalysts and Catalysis

(in redn., of H, in presence of hexamminecobalt trichloride and proteins)

IT Ovalbumins
(polarography of, in presence of hexaaminecobalt trichloride, H catalytic waves in)

IT **10534-89-1**, Cobalt, hexaamminecobalt trichloride
(in ovalbumin polarography, H catalytic waves and)

IT 1333-74-0, Hydrogen
(polarographic catalytic waves of, in presence of ovalbumins and hexaamine-**cobalt trichloride**)

L35 ANSWER 30 OF 30 HCA COPYRIGHT 2004 ACS on STN

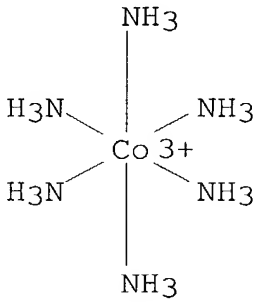
58:78605 Original Reference No. 58:13405g-h,13406a Complex compounds of trivalent cobalt with α-benzil dioxime. Ablov, A. V.; Syrtsova, G. P. (State Univ., Kishinev). Zhurnal Neorganicheskoi Khimii, 7, 2066-70 (Unavailable) 1962. CODEN: ZNOKAQ. ISSN: 0044-457X.

AB cf. CA 56, 9709d. Complex compds. of Co+++ with α-benzil dioxime (Df) (I) were studied to det. the effect of an exchange of a Me group in dimethylglyoxime by an aromatic radical on the reaction of substitution within the inner sphere of Co dioximes. Blowing air through 75 ml. BuOH, 1.1 g. **CoBr3**, and 2.4 g. I heated on a H2O bath till I dissolved, cooling, filtering, and recrystg. from MeOH gave H[Co(Df)2Br2].3MeOH. Treating filtrate with 57% HBr pptd. H[Co-(Df)2X].5H2O (II), X = Br, green prisms. The chloride was similarly prepd. Wetting II with MeOH and covering with a layer of H2O gave [CoH2O(Df)2X] (III). Treating II (X = Cl) with NaNO2 gave Na[Co(Df)2(NO2)2].10H2O, which treated with 1:1 H2SO4 gave H[Co(Df)2(NO2)2].5H2O. Heating it with HCl on a water bath gave [CoH2O(Df)2NO2].3.5H2O, Dissolving III (X = Cl) in warm 10-15 ml. MeOH and adding 0.47 g. NH4SCN in 4-5 ml. H2O gave NH4[Co(Df)2(SCN)2].H2O, yellow crystals. The K analog, similarly prepd., dissolved in warm MeOH and treated with concd. HCl gave II, X = SCN, which wetted with MeOH and treated with a little H2O and **NH4OH** gave III, X = SCN. Treating III, X = Cl, with concd. NaOH gave Na[Co-(Df)2(OH)2]. Adding 120 ml. BuOH to 1.3 g. **CoCl3**, 2.37 g. pyridine, and 4.8 g. I and blowing air while warming a water bath till all of I dissolved yielded 75% [Co(py)2(Df)2]Cl. Similarly [Co(py)(Df)2Cl] was obtained with a yield of 80-85%.

IT **10534-89-1**, Cobalt, hexaamminecobalt trichloride
(decompn. by heat)

RN 10534-89-1 HCA

CN Cobalt(3+), hexaammine-, trichloride, (OC-6-11)- (9CI) (CA INDEX NAME)



● 3 Cl^-

CC 14 (Inorganic Chemicals and Reactions)

IT Ammines
(cobalt, decompn. by heat)

IT Ammonium bis(diphenylglyoximato)dithiocyanatocobaltate(III), hydrate
Cobalt, bis(diphenylglyoximato)bis(pyridine)**cobalt chloride**
Cobaltate(III), bis(diphenylglyoximato)dithiocyanato-
Cobaltate(III), dibromobis(diphenylglyoximato)-
Cobaltate(III), dichlorobis(diphenylglyoximato)-
Cobaltate(III), dihydroxybis(diphenylglyoximato)-
Cobaltate(III), dinitrobis(diphenylglyoximato)-
Glyoxime, diphenyl-, cobalt complex
Hydrogen bis(diphenylglyoximato)dithiocyanatocobaltate(III), pentahydrate
Hydrogen dibromobis(diphenylglyoximato)cobaltate(III), compd. with MeOH, (1:3)
Hydrogen dibromobis(diphenylglyoximato)cobaltate(III), pentahydrate
Hydrogen dinitrobis(diphenylglyoximato)cobaltate(III), pentahydrate
Methanol, compd. with H dibromobis(diphenylglyoximato) cobaltate(III) (3:1)
Sodium dinitrobis(diphenylglyoximato)cobaltate(III), decahydrate

IT Cobalt, bis(hexaamminecobalt) trisulfate
Cobalt, hexakis(hydroxylamine)**cobalt trichloride**
(decompn. by heat)

IT 110-86-1, Pyridine
(cobalt complexes)

IT 7803-49-8, Hydroxylamine
(cobalt complexes, decompn. by heat)

IT **10534-89-1**, Cobalt, hexaamminecobalt trichloride
13859-51-3, Cobalt, chloropentaammine-, dichloride
(decompn. by heat)

IT 25969-20-4, Sodium dihydroxybis(diphenylglyoximato)cobaltate(III)
36795-68-3, Cobalt, chlorobis(diphenylglyoximato)aquo- 40309-69-1,
Cobalt, bromobis(diphenylglyoximato)aquo- 53495-52-6, Cobalt,
chlorobis(diphenylglyoximato)(pyridine)- 58034-57-4, Cobalt,
nitrobis(diphenylglyoximato)aquo- 103444-09-3, Potassium
bis(diphenylglyoximato)dithiocyanatocobaltate(III) 108597-43-9,
Hydrogen dichlorobis(diphenylglyoximato)cobaltate(III)
108755-92-6, Cobalt, bis(diphenylglyoximato)thiocyanatoaquo-
(prepn. of)

=> d his 136-

FILE 'REGISTRY' ENTERED AT 11:36:41 ON 26 FEB 2004
L36 394 S L2 NOT C/ELS

FILE 'HCA' ENTERED AT 11:37:34 ON 26 FEB 2004
L37 131 S L36/P
L38 27 S L37 AND (L18 OR L19)
L39 2 S L38 AND L20
L40 2 S L39 AND (L21 OR L22 OR L23)
L41 0 S (L39 OR L40) NOT (L34 OR L35)
L42 18 S L38 NOT (L34 OR L35)

=> d l42 1,2,3,5 cbib abs hitstr ind

L42 ANSWER 1 OF 18 HCA COPYRIGHT 2004 ACS on STN
136:410537 Synthesis and investigation of ammine complexes of d-metals' dithioarsenates. Gakhutishvili, M.; Gigauri, R.; Machaidze, Z.; Koranashvili, G.; Kokhreidze, M. (Javakhishvili Tbilisi State University, Russia). Bulletin of the Georgian Academy of Sciences, 164(1), 59-62 (English) 2001. CODEN: BGASFC. ISSN: 1560-0262. Publisher: Georgian Academy of Sciences.

AB Ammines of Sc(III), Y(III) and La(III) are easily pptd. by the action of precipitant, sodium dithioarsenate(V), on products of the reaction of sol. salts with excess **ammonium hydroxide**, while ammines of Cr(III) and Fe(III) dithioarsenates may be synthesized only by reaction of ligand (NH3) on the complex-forming intermediate obtained by treatment of metal salt with **ammonium hydroxide**.

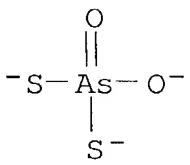
IT **430430-42-5P**
(prepn. of)

RN 430430-42-5 HCA

CN Cobalt(3+), hexaammine-, (OC-6-11)-, arsenodithioate (1:1) (9CI) (CA INDEX NAME)

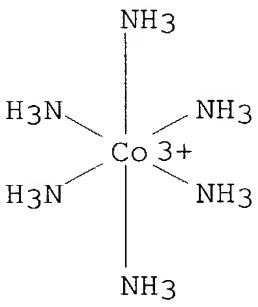
CM 1

CRN 33170-85-3
CMF As O2 S2



CM 2

CRN 14695-95-5
CMF Co H18 N6
CCI CCS



CC 78-7 (Inorganic Chemicals and Reactions)
ST transition metal ammine dithioarsenate prepn
IT Transition metal complexes
(ammines; prepn. of dithioarsenate salts of transition metal ammine complexes)
IT Ammine complexes
(transition metal; prepn. of dithioarsenate salts of transition metal ammine complexes)
IT 7646-79-9, Cobalt dichloride, reactions 7705-08-0, Ferric chloride, reactions 10099-60-2, Dilanthanum trisulfate 10141-00-1, Chromium potassium sulfate (CrK(SO4)2) 10361-93-0, Yttrium nitrate 13465-60-6, Scandium nitrate
(for prepn. of dithioarsenate salt of transition metal ammine complex)
IT 38007-31-7, Sodium thioarsenate (Na3AsO2S2)
(for prepn. of dithioarsenate salts of transition metal ammine complexes)
IT 430430-37-8P 430430-38-9P 430430-39-0P 430430-40-3P 430430-41-4P **430430-42-5P**
(prepn. of)

L42 ANSWER 2 OF 18 HCA COPYRIGHT 2004 ACS on STN
120:169467 Separation of cobalt from nickel after ammoniacal leaching of sulfide ores. Kerfoot, Derek G. E. (Sherritt Gordon Ltd., Can.). PCT Int. Appl. WO 9323578 A2 19931125, 24 pp. DESIGNATED STATES: W: AU, BR, CA, FI, JP, NO, RU, US; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1993-CA213 19930519. PRIORITY: CA 1992-2068982 19920519.
AB The Co is sepd. from aq. soln. contg. Co3+ and Ni2+ hexammine sulfates by adding (NH4)2SO4 and satg. the soln. with NH3 at a

controlled temp. to ppt. the triple salt of Co3+ hexammine sulfate-Ni2+ hexammine sulfate-NH4 sulfate. is pptd. The pptd. triple salt is recovered from the soln., and mixed with water or aq. **NH4OH** to selectively leach the Ni2 hexammine sulfate, resulting in the Co3+ hexammine sulfate as solid residue having the Co:Ni ratio of ≥100:1. The purified Co salt can be reacted in hot aq. soln. with Co powder to prep. Co2+ diammine sulfate soln. suitable for redn. with H2 for prepn. of Co powder.

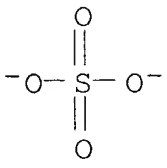
IT **14553-20-9P 153512-34-6P**
(prepn. of, after ammoniacal leaching of sulfide ores, metal sepn. with)

RN 14553-20-9 HCA

CN Cobalt(3+), hexaammine-, (OC-6-11)-, sulfate (2:3) (9CI) (CA INDEX NAME)

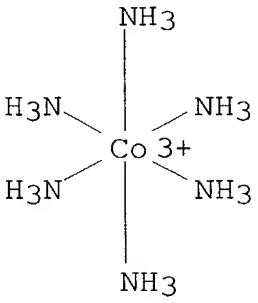
CM 1

CRN 14808-79-8
CMF O4 S



CM 2

CRN 14695-95-5
CMF Co H18 N6
CCI CCS



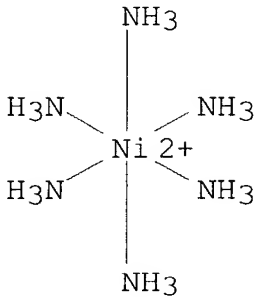
RN 153512-34-6 HCA

CN Cobalt(3+), hexaammine-, (OC-6-11)-, ammonium (OC-6-11)-hexaamminenickel(2+) sulfate (1:1:1:3), hexahydrate (9CI) (CA INDEX

NAME)

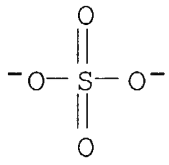
CM 1

CRN 15365-74-9
CMF H18 N6 Ni
CCI CCS



CM 2

CRN 14808-79-8
CMF O4 S



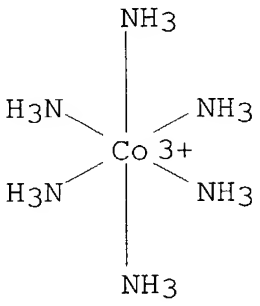
CM 3

CRN 14798-03-9
CMF H4 N

NH_4^+

CM 4

CRN 14695-95-5
CMF Co H18 N6
CCI CCS



CM 5

CRN 7732-18-5
CMF H2 O

H_2O

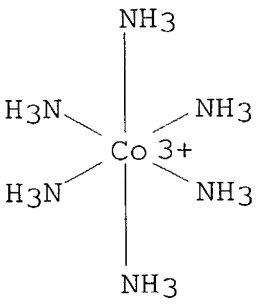
IC ICM C22B003-44
ICS C22B003-14
ICA C22B023-00
CC 54-3 (Extractive Metallurgy)
ST sulfide nickel ore ammoniacal leaching; cobalt sepn nickel sulfide ore leaching; ammine cobalt sulfate prepn ore leaching
IT **14553-20-9P** 15651-41-9P **153512-34-6P**
(prepn. of, after ammoniacal leaching of sulfide ores, metal sepn. with)
IT 7783-20-2, Diammonium sulfate, uses
(reagent, ammoniacal soln. treated with, for cobalt sepn. after leaching of sulfide ores)
IT 7440-02-0P, Nickel, preparation
(sepn. of, from cobalt, after ammoniacal leaching of sulfide ores)
IT 7440-48-4P, Cobalt, preparation
(sepn. of, from nickel, after ammoniacal leaching of sulfide ores)

L42 ANSWER 3 OF 18 HCA COPYRIGHT 2004 ACS on STN
113:47499 Ammonia complexes of hexaamminecobalt(III) in aqueous salt solutions. Stupko, T. V.; Isaev, I. D.; Mironov, V. E. (Sib. Tekhnol. Inst., Krasnoyarsk, USSR). Koordinatsionnaya Khimiya, 16(4), 555-7 (Russian) 1990. CODEN: KOKHDC. ISSN: 0132-344X.
AB The soly. of [Co(NH3)6](ClO4)3 was detd. in 1M NH4ClO4 solns. contg. 0-10 M NH3 of 298 K. Comparison with KClO4 std. soly. isotherms in **aq.** salt-**NH3** solns. indicates formation of outer-sphere NH3 complexes [Co(NH3)6](NH3)n3+ with stability consts.

(log Kn) for complexes with n = 1, 2, 3 equal to 0.95 ± 0.09 or -0.79, 0.59 ± 0.09 of 1.15, and 0.28 ± 0.12 or -1.46, resp. (H2O concn. expressed as mol/dm3 or as mol fraction, resp.).

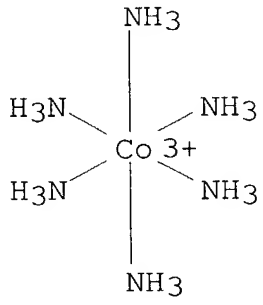
IT **81254-25-3P 128137-63-3P 128167-50-0P**
(formation of, in aq. salt solns.)

RN 81254-25-3 HCA
CN Cobalt(3+), hexaammine-, diammoniate, (OC-6-11)- (9CI) (CA INDEX NAME)



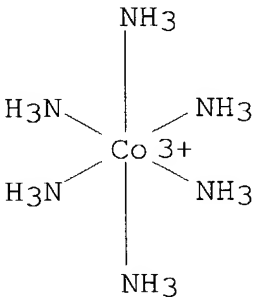
●2 NH_3

RN 128137-63-3 HCA
CN Cobalt(3+), hexaammine-, triammoniate, (OC-6-11)- (9CI) (CA INDEX NAME)



●3 NH_3

RN 128167-50-0 HCA
CN Cobalt(3+), hexaammine-, monoammoniate, (OC-6-11)- (9CI) (CA INDEX NAME)



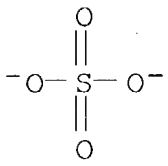
● NH3

CC 68-3 (Phase Equilibriums, Chemical Equilibriums, and Solutions)
ST cobalt ammine outer sphere complex; soly cobalt ammine perchlorate; ammonia outer sphere complex cobalt
IT **81254-25-3P 128137-63-3P 128167-50-0P**
(formation of, in aq. salt solns.)
IT 7790-98-9, Ammonium perchlorate
(soly. in aq. solns. of, of cobalt ammine complex perchlorate)
IT 13820-83-2, Hexaamminecobalt(3+) triperchlorate
(soly. of, in aq. salt solns. contg. ammonia, outer sphere complex formation in relation to)

L42 ANSWER 5 OF 18 HCA COPYRIGHT 2004 ACS on STN
108:193420 Selection of species and quantity of activated carbon as catalyst of the hexamminocobalt(III) sulfate-nitrate synthesis. Wlodyka, Jerzy (Inst. Met. Niezelaznych, Gliwice, Pol.). Przemysl Chemiczny, 66(8), 385-7 (Polish) 1987. CODEN: PRCHAB. ISSN: 0033-2496.
AB Among the investigated com. activated carbons (Z-1, Z-2, Z-3, Z-4, and WS), Z-3 is considered the most suitable for oxidn. of Co2+ to [Co(NH3)6]3+ in **NH4OH** medium in the presence of Ni2+, SO42-, and NO3-. Thus formed [Co(NH3)6]NO3SO4 is sparingly sol. in aq. soln. and can be used for sepn. of Co from Ni.
IT **106305-69-5P**
(synthesis of, activated carbon catalyst for oxidn. in)
RN 106305-69-5 HCA
CN Cobalt(3+), hexaammine-, (OC-6-11)-, nitrate sulfate (1:1:1) (9CI) (CA INDEX NAME)

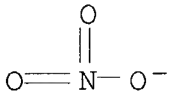
CM 1

CRN 14808-79-8
CMF O4 S



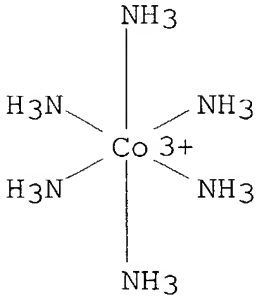
CM 2

CRN 14797-55-8
CMF N O3



CM 3

CRN 14695-95-5
CMF Co H18 N6
CCI CCS



CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 56, 79
ST carbon activated catalyst oxidn cobalt ammonia; cobalt ammino nitrate sulfate synthesis catalyst; nitrate sulfate hexamminocobalt synthesis sepn nickel
IT Oxidation catalysts
(activated carbons, in hexamminocobalt nitrate sulfate synthesis in sepn. from nickel ions)

IT 7440-44-0, uses and miscellaneous
(activated, catalysts, for cobalt(2+) oxidn. in sepn. from nickel ions)
IT 10124-43-3
(oxidn. of cobalt in soln. of, in presence of ammonia and nitrate and sulfate and nickel ions, activated carbon as catalyst in)
IT 7786-81-4, Nickel sulfate
(sepn. of cobalt(2+) from solns. of, activated carbon as catalysts in)
IT **106305-69-5P**
(synthesis of, activated carbon catalyst for oxidn. in)